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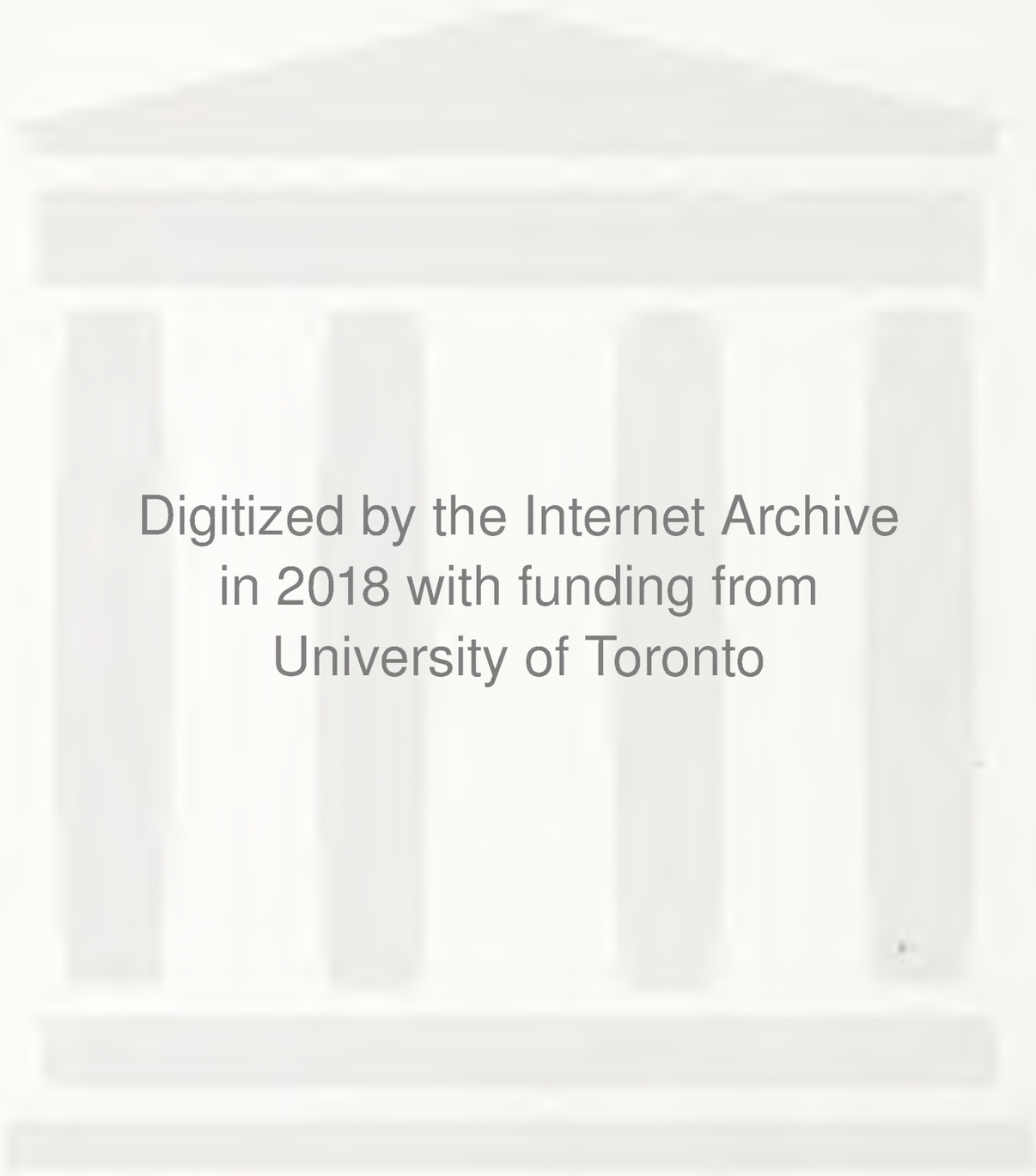
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THE

# FLORAL CABINET,

AND

# MAGAZINE OF EXOTIC BOTANY.


CONDUCTED BY

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AND

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# INDEX TO VOLUME THIRD.


| LATIN NAMES. | | ENGLISH NAMES. | PAGE |
|---|---|---|---|
| Acacia dealbata | Link. | Whitened Acacia | 51 |
| Aristolochia hyperborea | Hort. | Northern Aristolochia | 167 |
| Astragalus virgatus | Pall. | Twiggy Astragalus | 145 |
| Begonia Meyeri | Otto | Meyer's Begonia | 161 |
| — Barkeri | Kn. et West. | Mr. Barker's Begonia | 179 |
| Billbergia iridifolia | Lindl. | Iris-leaved Billbergia | 55 |
| Cheiranthus ochroleucus | Kn. et West. | Pale yellow Wall-flower | 117 |
| Chorozema varium | Lindl. | Various-leaved Chorozema | 165 |
| Cirrhæa viridi-purpurea, *var.* Fryana | Kn. et West. | Mr. Fry's greenish-purple Cirrhæa | 7 |
| Cytisus triflorus | L'Herit. | Three-flowered Cytisus | 49 |
| Dahlia Barkeriæ | Kn. et West. | Miss Barker's Dahlia | 147 |
| — scapigera | Lk. et Otto | Scape-bearing Dahlia | 113 |
| Dendrobium fimbriatum | Lindl. | Fimbriate Dendrobium | 71 |
| — amœnum | Wall. | Lovely Dendrobium | 103 |
| Diplacus puniceus | Nutt. | Scarlet Diplacus | 67 |
| Echinacea dubia | Kn. et West. | Doubtful Echinacea | 163 |
| Erysimum Perowskianum | Fisch. et Mey. | Perowski's Hedge Mustard | 79 |
| Gilia coronopifolia | Pers. | Raven-footed Gilia | 3 |
| Hoitzia coccinea | Cav. | Crimson Hoitzia | 35 |
| Hypericum hyssopifolium | Vill. | Hyssop-leaved St. John's Wort | 1 |
| Impatiens picta | Kn. et West. | Painted Balsam | 149 |
| Leontice chrysogonum | Lin. | Golden-flowered Leontice | 33 |
| Lathyrus Armitageanus | Kn. et West. | Mr. Armitage's Lathyrus | 81 |
| Linaria delphinoides | Gay. | Delphinium-like Linaria | 99 |
| Lupinus Barkeriæ | Kn. et West. | Mrs. Barker's Lupine | 129 |
| Mormodes pardina | Batem. | Leopard-spotted Mormodes | 87 |
| Odontoglossum cordatum | Lindl. | Heart-shaped Lipped Odontog. | 39 |
| — Rossii, *var.* acuminatum | Kn. et West. | Acuminated var. of Ross's Odontog. | 151 |
| Oncidium luridum, *var.* Henchmanni | Kn. et West. | Henchmann's var. of the lurid Oncid. | 21 |
| — Batemannianum | Parmentier | Mr. Bateman's Oncidium | 183 |
| Onosma setosum | Ledeb. | Bristly Onosma | 83 |
| Osbeckia canescens | Meyer | Hoary Osbeckia | 131 |
| Oxalis Darwalliana | Kn. et West. | Dr. Darwall's Oxalis | 5 |
| Petrea volubilis | Lin. | Twining Petrea | 69 |
| Phaius albus | Lindl. | White-flowered Phaius | 135 |
| Podalyria styracifolia | Sims | Styrax-leaved Podalyria | 53 |
| Potentilla hæmatochrous | Lehm. | Blood-flowered Potentilla | 115 |
| Rafnia triflora | Thunb. | Three-flowered Rafnia | 97 |

| LATIN NAMES. | | ENGLISH NAMES. | PAGE |
|---|---|---|---|
| Salvia argentea | Lin. | Hoary Sage | 85 |
| Sisyrinchium junceum | Kn. et West. | Rush-like Sisyrinchium | 17 |
| Stanhopea maculosa | Kn. et West. | Spotted Stanhopea | 119 |
| Tradescantia spicata | Kn. et West. | Spike-flowered Tradescantia | 133 |
| Tricopilia tortilis | Lindl. | Twisted Tricopilia | 37 |
| Umbilicus sempervivum | Decand. | Sempervivum-like Navelwort | 101 |
| Veronica diosmæfolia | Cun. | Diosma-leaved Veronica | 65 |


*New Plants described exclusively, but not figured, in this Work.*


| | | |
|---|---|---|
| Acacia semiverticillata | Kn. et West. | Vol. 2, fol. 27 |
| Billardiera Daphnoides | Kn. et West. | Vol. 2, fol. 60 |
| Crotalaria undulata | Kn. et West. | Vol. 2, fol. 158 |
| Dahlia Roylcana | Kn. et West. | Vol. 3, fol. 186 |
| Epidendrum crispatum | Kn. et West. | Vol. 2, fol. 79 |
| — stenopetalum | Kn. et West. | Vol. 2, fol. 175 |
| — tridactylum, *var.* pallidum | Kn. et West. | Vol. 2, fol. 186 |
| Leochilus (gen. nov.) | Kn. et West. | Vol. 2, fol. 143 |
| Lissanthe stellata | Kn. et West. | Vol. 3, fol. 79 |
| Lobelia multiflora | Kn. et West. | Vol. 3, fol. 126 |
| Nemaconia graminifolia | Kn. et West. | Vol. 2, fol. 127 |
| Oncidium carinatum | Kn. et West. | Vol. 2, fol. 31 |
| — unicornutum | Kn. et West. | Vol. 2, fol. 143 |
| Passiflora hispidula | Kn. et West. | Vol. 3, fol. 126 |
| Pleurothallis villosa | Kn. et West. | Vol. 2, fol. 78 |
| Polypodium glaucum | Kn. et West. | Vol. 2, fol. 176 |
| Solanum Rossii | Kn. et West. | Vol. 2, fol. 141 |
| Sutherlandia frutescens, var. subcanescens | Kn. et West. | Vol. 2, fol. 76 |


## BOTANICAL AND GARDENING COMMUNICATIONS.


| | PAGE |
|---|---|
| On the cause of Canker in Apple-trees | 9 & 23 |
| On the culture of Phalocallis plumbea | 10 |
| Reflections on the approach of spring | 10 |
| On the Order Myristaceæ | 12 |
| On the irritability of Plants | 23 |
| On the Order Palmaceæ | 25 |
| On the progress and principle of ornamental gardening | 41, 57, 73, 107, 121 |
| Suggestions for the transportation of seeds from warm climates | 44 |
| On the excretions of the roots of plants | 75 |
| On the exhalation of vegetables | 89, 105 |
| On preserving the beauty of flowers | 92 |
| On Tropæolum tuberosum | 109 |
| On the cultivation of several kinds of Phlox | 137 |
| On the love of flowers | 138 |
| On the development of the Theca and the sexes of Mosses | 169 |
| On the culture of the Vine | 173 |
| On the Order Nymphæaceæ | 153 |
| The Naturalist's Autumnal Walk | 156 |

Botanical Notices of New Plants, 14, 29, 45, 61, 77, 94, 109, 124, 141, 157, 173
Monthly Gardening Operations, 16, 32, 48, 64, 80, 96, 112, 128, 144, 160, 176

# HYPERICUM HYSSOPIFOLIUM.

(*Hyssop-leaved Hypericum.*)

LINNEAN SYSTEM.
POLYADELPHIA POLYANDRIA.

No. 91.

NATURAL ORDER.
HYPERICACEÆ.

GENERIC CHARACTER.

Hyperieum. (Linn.) *Capsula* membranaeea. *Styli* 3-5 in quibusdam numero variabiles. *Stamina* numerosa basi polyadelpha, rarò numero subdefinita. *Petala* 5. *Scpala* 5, basi plus minùsve coalita et inæqualia. Herbæ aut suffrutiees. *Folia* opposita, sæpè pellueido-punetata, aut margine nigro-punetata. *Flores* variè dispositi.—(*Decand.* vol. i. p. 544.)

*Capsule* membranaeeous. *Styles* 3-5, in some variable in number. *Stamens* numerous, polyadelphous at the base, rarely somewhat definite in number. *Petals* five. *Sepals* five, more or less united and unequal at the base.—Herbs or undershrubs. *Leaves* opposite, often marked with pellueid dots, or dotted with blaek on the margin. *Flowers* variously disposed.

SPECIFIC CHARACTER.

H. Hyssopifolium; *Caule* suffrutieoso reeto tereti sub-ramoso; *foliis* oblongo-lanceolatis subobtusis utrinquè attenuatis margine revolutis pellueido-punetatis in axillâ faseieulatis; *calyce* ovato subobtuso apice serrulato-glanduloso; *corollâ* glandulosâ; *stylis* 3 liberis diver-gentibus.

*Stem* somewhat shrubby, ereet, round, somewhat branched; *leaves* oblong-laneeolate, rather obtuse, narrowed at eaeh end, revolute in the margin, marked with pellueid dots, elustered in the axilla; *calyx* ovate, rather obtuse, minutely serrated, and glandular at the apex; *corolla* glandular; *styles* three, free, divergent.

Hyperieum hyssopifolium.—*Vill. Delph.* 3, p. 305, t. 44.—*Decand.* vol. i. p. 552.

Deser.—*Stem* from a foot to a foot and a half high, moderately braneheḍ; *leaves* narrow, from half to three quarters of an ineh in length, sprinkled with pellueid dots; *panicle* lax, many-flowered; *petals* obovate, somewhat reflexed.

---

This handsome and interesting plant is a native of the South of France, Tauria, &c. Our drawing was made from a specimen in the collection of the Birmingham Botanic Garden. It is a desirable acquisition to the flower border, as it blossoms freely, and endures for some time.

The genus *Hypericum* is extensive, containing not less than 130 species, which are arranged by Decandolle in five sections, of which the fourth is termed "Perforaria," and is characterised chiefly by the pellucid dots of the leaves. This section, which contains by far the largest portion of the species, is arranged in two subdivisions, one with the sepals *entire*, the other with the sepals *toothed*, and frequently *glandular;* in the latter subdivision is the station of our plant, which has the sepals minutely serrated and glandulose at their apex.

The several species of *Hypericum*, or St. John's Wort, have handsome yellow flowers, many of which are exceedingly ornamental in shrubberies. They are resiniferous in their properties, and have, for the most part, a strong disagreeable odour when bruised, and an astringent, bitter taste. Hence some of them have been used for medicinal purposes from an early period. *Hypericum perforatum*, a common, though handsome species, is the *Fuga Dæmonum* of old herbalists, and is a plant formerly held in great estimation for its supposed influence in conjurations and enchantments; and it is said that the peasants of France and Germany, even in the present day, gather it with great ceremony on St. John's Day, believing it to be a preservative against thunder. In Scotland persons formerly carried it about their persons as a charm against witchcraft.

The following lines, alluding to a custom which prevails in Lower Saxony, were originally translated from a German Almanac :—

### ST. JOHN'S WORT.

The young maid stole thro' the cottage door,
And blush'd as she sought the plant of power;—
Thou silver glow-worm, oh! lend me thy light,
I must gather the mystic St. John's Wort to-night;
The wonderful herb, whose leaf will decide,
If the coming year shall make me a bride.
And the glow-worm came,
With its silvery flame,
And sparkled and shone
Thro' the night of St. John,
And soon has the young maid her love-knot tied.

With noiseless tread
To her chamber she sped,
Where the spectral moon her white beams sheds :
"Bloom here, bloom here, thou plant of power,
To deck the young bride in her bridal hour!"
But it droop'd its head—that plant of power—
And died the mute death of the voiceless flower;
And a wither'd wreath on the ground it lay,
More meet for a burial than bridal day.

And when a year had pass'd away,
All pale on her bier the young maid lay!
And the glow-worm came,
With its silvery flame,
And sparkled and shone
Thro' the night of St. John,
And they closed the cold grave on the maid's cold clay.

Fig. 1, germ, with its three styles; 2, vertical section of the capsule, showing the arrangement of seeds.

Day & Haghe lith.rs to the Queen

# GILIA CORONOPIFOLIA.

(*Raven-footed Gilia.*)

LINNEAN SYSTEM.
POLEMONIACEÆ. *Juss.*

No. 92.

NATURAL ORDER.
PENTANDRIA MONOGYNIA.

GENERIC CHARACTER.

Gilia. *Calyx* campanulatus, 5-fidus, margine et sinubus membranaceus. *Corolla* infundibuliformis vel subcampanulata. *Limbo* 5-partito, laciniis obovatis integris. *Stamina* ad faucem vel vix intra tubum inserta. *Antheræ* ovato-subrotundæ. *Capsulæ* loculi polyspermi.—*Benth.*

*Calyx* bell-shaped, 5 divisions, having the margin sinuses membranaceous. *Corolla* funnel-shaped, or somewhat bell-shaped. *Limb* 5-parted, divisions obovate, entire. *Stamens* inserted in the throat of the corolla, scarcely in the tube. *Anthers* roundish, ovate. Cells of the *Capsule* many-seeded.

SPECIFIC CHARACTER.

G. Coronopifolia. *Caulibus* strictis paniculatis glanduloso-pubescentibus. *Foliis* pectinatim pinnatis; laciniis filiformibus apice setaceis. *Corollis* elongatis tubulosis limbi patuli laciniis oblongis acutis. *Lindl. Bot. Reg.* p. 1691.

*Stem* erect, paniculate, glandularly downy. *Leaves* comb-shaped, winged; divisions filiform, bristly at the apex. *Corolla* lengthened, tubular, limb spreading, divisions oblong, acute.

Gilia coronopifolia.—*Pers.*

Ipomopsis elegans.—*Lin. Ex. Bot.*

Ipomopsis picta.—*Hort. Gallic.*

---

This plant was called *Ipomopsis*, and was considered by Dr. Lindley as a genus distinct from *Gilia*: however, it has lately undergone an examination by Mr. Bentham, who decides it to be essentially the same as *Gilia*, and making *H. Ipomopsis* a section, under the following character:—"Leaves alternate, pinnatisected, or pinnatifid. Flowers axillary, or glomerate. Tube of the corolla elongated, longly protruding."

The above writer also separates the North-west American species from that of Carolina, in consequence of the following differences. *Gilia coronopifolia*, our present plant, is a native of Carolina; it is covered all over with glandular pubescence, its leaves have very narrow divisions, which taper off to a fine point; the segments of the corolla are not reflexed, but spreading, flat, and with slight

points. On the contrary, *Gilia pulchella* is a North-west American plant, has no glands on the stem, its leaves have flat narrow segments, which do not taper to the point, and the corolla has the segments almost triangular and reflexed.

Our present species is a half-hardy biennial. The seed should be sown in a gentle heat in August or September, and potted off in one or more small pots for the winter, during which time they should be kept in an airy part of the greenhouse, near to the glass. In spring they should be shifted into larger-sized pots, containing a mixture of loam and sand. As they advance in growth they may either be shifted into flowering pots, to be kept in the greenhouse, or planted out in June into the open ground, in rather a shady situation.

The genus Gilia was dedicated by Ruiz and Pavon in compliment to Gilio, a Spanish botanist.

Day & Haghe Lith.rs to the Queen.

# OXALIS DARVALLIANA.

*(Dr. Darwell's Oxalis.)*

LINNEAN SYSTEM.
DECANDRIA PENTAGYNIA.

No. 93.

NATURAL ORDER.
OXALIDEÆ.—(*Decand.*)

## GENERIC CHARACTER.

Oxalis (Lin.) *Calyx* 5-sepalus, *sepalis* liberis aut basi coalitis. *Petala* 5. *Stamina* 10 filamentis basi breviter monadelphis, 5 exterioribus alternis brevioribus. *Styli* 5 apice penniciliformes aut capitati. *Capsula* pentagona oblonga aut cylindracea. Herbæ *perennes*, caulescentes stipitatæ aut acaules, foliis variis sed nunquam abruptè pinnatis. (*Decand. Prod.* vol. i. p. 690.)

*Calyx* five-sepaled, sepals free or joined at the base. *Petals* five. *Stamens* ten, filaments shortly monadelphous at the base, five exterior ones alternately shorter. *Styles* five, brush-like or capitate at the apex. *Capsule* five-sided, oblong or cylindrical. Herbaceous *perennial* plants, caulescent stipitate or stemless, having various-formed leaves, but never abruptly pinnate.

## SPECIFIC CHARACTER.

O. Darvalliana; *radice* tuberosa repente; *foliolis* ternis latè linearibus sparsè hirsutis, marginibus glanduloso-punctatis emarginatis; *floribus* solitariis albidis margine pallidè coccineis; *stylis* longissimis glanduloso-hirsutis.

*Root* tuberous, creeping; *leaflets* in threes, broadly linear, scattered over with hairs, surrounded at the margin with glandular dots, notched at the end; *flowers* solitary, whitish, having a margin of pale crimson; *styles* very long, glandularly hairy.

Descr.—*Root* tuberous, creeping. *Stem* about four inches high, smooth, having numerous leaves from the nodi. *Leaves* in threes. *Leaflets* broadly linear, notched at the end, and scattered all over with white hairs, the margins bordered all round with dark glandular dots. *Petioles* somewhat sheathing at the base, of unequal lengths, pubescent, some longer than the leaves, others shorter. *Flowers* solitary. *Peduncle* arising from the axil of the leaf, and longer than the leaves, pubescent. *Bracts* two, situate a quarter of an inch below the flower, scarlet. *Calyx* hairy, lanceolate, acute, surrounded with a crimson margin. *Petals* whitish, having their margin surrounded with crimson, in the same manner as the calyx. *Claw* yellow. *Filaments* in two heights, five and five, glandularly hairy, both of which are shorter than the styles. *Styles* five, glandularly hairy, longer than the filaments, thickened at the apex. *Ovarium* five-celled, smooth. *Ovules* numerous.

---

This is a very delicate plant, but shy in producing flowers, and still more shy in expanding them than the other species of the genus. It approaches very near

*O. versicolor* (Lin.), but differs from that species in having the leaflets broader, and *surrounded* with glandular dots; the leaflets of *O. versicolor* having them only at their apex. It differs also in its creeping root, which may probably account for its shyness in flowering. We have named this plant in compliment to the late Dr. Darwall, with whom, and the late Mr. Armitage, the Birmingham Botanical and Horticultural Society might be said to have had its origin. We have also complimented Mr. Armitage in a similar manner in a *Lathyrus* from South America, and we trust we shall be able to publish a figure of it in an early number.

The geographical distribution, and other remarks on this genus, are given at page 21 of the first volume.

3 2 1

P. Miller del.

Day & Haghe Lith.rs to the Queen.

# CIRRHÆA VIRIDIPURPUREA; *var.* FRYANA.

(*Mr. Fry's Cirrhæa.*)

LINNEAN SYSTEM.
GYNANDRIA MONANDRIA.

No. 94.

NATURAL ORDER.
ORCHIDACEÆ. § VANDEÆ.

GENERIC CHARACTER.

Cirrhæa (Lindl.) Perianthium patens. *Sepala* libera, æqualia. *Petala* multò angustiora, linearia, flexuosa. *Labellum* longè unguiculatum, columnâ continuum tripartitum; laciniis angustis intermediâ minore. *Columna* ereeta elavata, teres, stigmate subquadrato, horizontali! rostello eirrhato. *Anthera* dorsalis! membranacea, subuniloeularis. *Pollinia* 2 parallela, oblonga, compressa elastieè prosilientia; caudieulâ brevi corneâ glandulâ ineurva. *Herbæ* epiphytæ, pseudo-bulbosæ. *Folia* plieata. *Racemi* penduli, multiflori, radieales. *Flores* maeulati.—(*Lindl. Gen. et Spec. Orchid.* page 141.)

Perianth patent. *Sepals* free, equal. *Petals* much narrower, linear, flexuose. *Labellum* longly elawed, eontinuous with the eolumn, three-parted, divisions narrow, the intermediate one smaller. *Column* ereet, club-shaped, round, stigma somewhat square, horizontal, with a eirrhous beak. *Anthera* plaeed at the baek of the eolumn, membranaceous, one-celled. *Pollinia* 2, parallel, oblong, eompressed elastieally, shooting out. *Caudicula* short, horny, gland ineurved. *Epiphytic* pseudo-bulbose plants. *Leaves* plieate. *Racemes* pendulous, many-flowered, seape arising from the base of the pseudo-bulb. *Flowers* spotted.

SPECIFIC CHARACTER.

*Foliis* laneeolatis; *petalis* earnosis linearibus fuseis sepalis duplo minoribus et brevioribus; *sepalis* lutiseentis revolutis; *labello* tripartito aeuto, earnoso, partibus subæqualibus.

*Leaves* laneeolate; *petals* fleshy, linear, brownish, as small again as the sepals; *scpals* yellowish, revolute; *labellum* three-parted, aeute, fleshy, parts somewhat equal.

Deser.—Pseudo-bulbs ovate, furrowed. *Leaves* laneeolate, solitary. *Scape* eompressed, two-edged. *Sepals* thin, of a yellowish green eolour, unspotted, bent baek at the margins, twiee as broad, and longer than the petals. *Petals* linear, fleshy, delieately eoloured with fine spots of reddish brown, shorter than the sepals. *Labellum* fleshy, divided into nearly three equal parts, eaeh part aeute, the upper of whieh is banded with dark purple, the two other parts are parallel with each other, are more fleshy and yellow, tinted in the eentre with orange, and at the union there is a fleshy protuberanee, the elaw of the labellum is longer than the lobes, the column reaehes to the eentre of the labellum, and is marked in a similar manner to the petals but more distinet. The *stigma* is in the shape of a horse-shoe oblique, and then fixed at the baek of the eolumn, one-celled, with two fleshy appendages inside; beak very finely subulate. *Pollen-masses* eompressed, eoneave; *gland* hooked.

---

The genus *Cirrhæa* is singular, and curious in the structure of its flowers, which hang in beautiful tresses over the sides of the pot, but unfortunately they

are but of short duration, seldom lasting more than a few days, when they lose their colour, and as it were dissolve: such was the character of our species as regards structure. This plant very much resembles *C. viridipurpurea*, from which it differs chiefly in its markings. We are disposed therefore to consider it merely a variety.

The genus *Cirrhæa* is South American, and all, we believe, that are at present known are natives of Brazil. Our plant was received at the Birmingham Horticultural Society in the autumn of 1835, from Rio, forwarded by E. W. Fry, Esq. It requires to be kept in a humid stove while growing, and, when in a dormant state, should be kept in a cool house, and have but little water. The soil should be rough sandy peat, using plenty of drainers in the bottom of the pots. When increase is wanted, the pseudo-bulbs should be separated some time before dividing.

The generic name Cirrhæa is derived from κιρρος yellow, or fulvous, in allusion to the colour of the flowers of the species first described.

Fig. 1, lateral view of a flower, showing the labellum continuous with the column; 2, the three-lobed labellum; 3, the pollinia, with their caudicula and gland.

# ON THE CAUSE OF CANKER IN APPLE TREES.

BY D. CAMERON, A.L.S.

Soon after the establishment of the London and Caledonian Horticultural Societies, the attention of horticulturists was directed towards devising a cure for the Canker in Apple Trees. Since that time, many recipes have been given, but still the evil is not much lessened, if we may judge by the appearance of many orchards, and more particularly in gardens. In orchards, the canker is not so prevalent, in consequence of a spot in which the soil and situation being selected which are suitable: but in gardens, however small or unfavourable the situation may be, there are almost invariably apple trees, and consequently in such gardens the canker is most common. That some of the recipes produced from the above source were of considerable service there can be no doubt: the error with some appears to have been in considering the canker as a primary disease, instead of being produced by a vitiated or deficient state of the juices, occasioned by various causes; such as soil, situation, &c. It is not likely that an effectual cure will ever be found for the canker. Its effects, however, may be considerably mitigated by ascertaining its cause in the particular locality, and when ascertained, to remove the cause as much as possible; by which means the effects of the canker will cease in a corresponding degree. Some varieties of apples are much more subject to the canker than others, but the age of the variety does not appear to be of so much consequence as an unfavourable soil and situation. The Downton pippin will canker as well as the golden pippin. Having stated my opinion thus far, it may be well for me to point out a few of those causes that have come under my own observation, with the most likely means of remedy, leaving it to others to supply deficiencies, and what has come under their own observation.

One cause of canker is where the soil is naturally cold and damp, or made so by excessive rains in the spring. The growing season commences with warm, mild, and cloudy weather, forcing the trees into blossom, and into leaf, before the roots from the chilly state of the soil can emit fibres sufficient for the support of their tops. All seems going on well, until either a few days of clear sunshine, or a dry parching wind comes on. When this happens, by looking over the trees, many clusters both of blossoms and buds, and also leaf-buds, will be found on many trees drooping and withering; every one of which, if not cut out with a knife into the sound wood, are the seeds of future canker, and will sink deeper into the branches of the trees, until they will frequently cause, in the course of time, total decay of all that part of the branch situated above where the canker commences.

## ON THE CULTURE OF PHALOCALLIS PLUMBEA.

*Herb. Bot. Mag.* t. 3710; *Syn.* CYPELLA PLUMBEA, *Lindl.;* and MARICA CŒLESTIS, *Lehm.*

BY DAVID CAMERON, A.L.S.

This pretty and singular plant was raised in the Birmingham Horticultural Society's Gardens about six years ago, from seeds received from Mr. Hunneman under the name of *Marica cœlestis*, Lehm. It has proved to be perfectly hardy, having been out in the border in the front of the houses during the winters of 1836-7-8 without the least protection, and sustained no injury; in which situation it flowered both seasons, and perfected seeds in the autumn of the year 1838. As it, however, flowers so very late in the season, the best method is, in the autumn to take up the bulbs and pot them, and place them in the greenhouse during the winter and the spring; by this means the bulbs will be set growing. In May turn them into the open border, where they will come into flower much earlier, and continue sending out a considerable number of flowers at intervals from the same scape, and will frequently also ripen seeds, which are the more desirable, as it does not appear to give much increase by bulbs.

The seeds vegetate freely in heat, and the plant generally flowers the second year. The soil for potting the bulbs in should be loam, sand, and a little peat. It seems to succeed well in common garden soil when planted out of doors.

With us the flowers open about two o'clock, and close about three o'clock in the afternoon.

## REFLECTIONS ON THE APPROACH OF SPRING.

How sweet, how refreshing is the breath of spring, when the morning sun first sheds its genial warmth around, and whispers in the brightness of those cheering rays the coming of its summer splendour,—when the glistening dew-drops that lie enfolded in each opening bud, and the young spring flowers, and the wild bird's note, tell of those radiant glowing days when the warm smile of summer shall beam again upon the face of nature! How pure! how grateful are the feelings we experience in gazing upon the first few blossoms of the early spring! We know that the cold icy blasts of winter are now pouring forth their terrors over other lands, and our own sweet valleys are again reviving in their wonted freshness and beauty, under the cheering influence of milder gales. Again the pale snowdrop and the glowing crocus rise from their frozen slumber, the lowly violet breathes forth its delicious odour from some sheltered lane or mossy bank, and each succeeding day we are greeted by some new smiling face

that the gloom of winter had almost driven from our memory. Among the many pleasing forms that meet our view on a bright sunny morning in March or April, none is more graceful or more simple than the pretty "Draba verna." This little plant is often, when in full flower, not more than half an inch high, and yet as perfectly symmetrical in structure as the most gaudy exotic. The lover of plants, indeed, who is accustomed to notice the first productions of spring, never fails to welcome the appearance of this simple flower with more than ordinary interest.

For even in this early season of the year, when nature has unfolded but a small portion of her charms, unnumbered objects in the vegetable world present themselves to our notice, and claim the admiration of every reflecting mind. The swelling bud informs us that the tree is no longer dormant—that the sap has begun to flow preparatory to the expansion of the leaves—that the roots are in a state of activity, imbibing from the soil such substances as may be suitable to their economy, and conveying them upwards for the purposes of nutrition. The process of vegetation being once commenced, a continual supply of sap is demanded and carried to the extremity of every branch and every leaf, till the periodical increase is completed.

The early period at which some trees put on their mantle of inflorescence, is a circumstance of peculiar interest; the nut and the poplar are now adorned with their catkins, elegantly pendulous, before a single leaf has started from its bud. The earliest of the willow tribe are also decorated in a similar manner with their catkins, which emerging from their silky coverings, unfold their golden stamens to the breeze.

Among the trees whose inflorescence is displayed in more attractive colours, one of the earliest is the almond-tree, which forms one of the most lovely ornaments of the shrubbery, the branches being covered with their blushing blossoms before any leaves make their appearance.

These early beauties cannot but furnish the lover of nature with ample sources of the purest delight.

But should the spirit of gladness be the only one which animates our thoughts? Should there not be a deeper, a holier feeling, when we view the young flowers springing again into life, amid fallen stems and scattered leaves—the desolation of death? Oh! yes, we should indeed remember that by the same hand which felled the flowers in their appointed seasons, we also must meet our doom; and that as the voice of spring raises them again unto life and beauty, we also may hope to be raised from the dark sleep of the grave, and welcomed by the voice of Divine Love into the realms of *eternal* life! There is, indeed, in the whole volume of nature, one glorious display of infinite wisdom. The smallest, the most insignificant of flowers bears upon it the impress of the Almighty hand, and must excite in every heart emotions of gratitude and admiration. Who can gaze upon the green pastures of our native land, studded with the wild flowers of

spring, and not feel this emotion? Who can look upon the modest daisy, with its snowy fringe and golden crest, without some thought swelling in his bosom of joy, and hope, and love?

Dr. Mason Good has alluded to this feeling in some elegant lines, which we subjoin,—

### THE DAISY.

Not worlds on worlds in phalanx deep
Need we to prove a God is here;
The daisy, fresh from winter's sleep,
Tells of his hand in lines as clear.

For, who but He who arch'd the skies,
And pours the day-spring's living flood,
Wondrous alike in all He tries,
Could rear the daisy's purple bud;

Mould its green cup, its wiry stem,
Its fringed border nicely spin;
And cut the gold-embossed gem
That, set in silver, gleams within;

And fling it, unrestrain'd and free,
O'er hill, and dale, and desert sod,
That man, where'er he walks, may see
In every step, the stamp of God?

## MYRISTICACEÆ.—THE NUTMEG TRIBE.

The Nutmeg, *Myristica*, with some kindred genera, were formerly united in the same order with the *laurels*, from which they were separated by Dr. Brown, on account of their diœcious flowers and other points of difference. They are tropical, much-branched trees, with exstipulate, alternate, simple, undivided leaves, devoid of pellucid dots, coriaceous in substance, and, when full grown, generally downy beneath. The flowers are axillary or terminal, racemose or panicled. The fruit is fleshy, the seed nut-like, erect (*the nutmeg*), and inverted by a many-cleft arillus (*the mace*). Of the genus *Myristica* there are several species, but *Myristica moschata* is the most valuable and the best known. The fruits of all of them are more or less aromatic; and it is said that some of them are not unfrequently mixed with the genuine nutmeg, although containing much less essential oil, and consequently being far less aromatic, and very inferior as a spice.

The Banda isles, though very small, were formerly the nutmeg gardens of the world, and were first colonized by the Dutch, who, in 1602, having reduced to subjection the original inhabitants, endeavoured, by every means in their power, to secure to themselves the entire trade in this valuable spice; with this view they confined the cultivation of the nutmeg tree to a few of the islands, and it is said they contrived to have all the trees in the other islands destroyed. During the period they remained possessors of the spice islands, the quantity of mace and nutmegs exported from their colonies appears to have been immense; no less than 250,000 lbs. having been sent annually to Europe alone. After these islands were taken by the British, which was in 1796, there were imported into England alone by the East India Company, in the two succeeding years, 129,723 lbs. of nutmegs, and 286,000 lbs. of mace. When the crops were superabundant, the Dutch, in order to prevent a reduction in the market price, are reported to have been in the habit, occasionally, of burning prodigious quantities of their various spices, by which the air for miles around has been perfumed with their aromatic scent.

Within the last forty years the nutmeg has been extensively cultivated in many of our tropical settlements, particularly at Bencoolen, in Sumatra, and in the West India islands; their culture in the former place is attended with complete success, the crops being abundant, and of fine quality; in the latter country they are not found to succeed.

Nutmegs are found, by analysis, to contain two distinct oily principles, one a fixed oil obtained by expression, the other an essential oil obtained by distillation. The knowledge of this fact has led to the fraudulent practice of puncturing and boiling them in order to extract the aromatic oil, the orifices being afterwards carefully stopped to prevent discovery; but the cheat having been detected, is now rarely practised.

The nutmeg-tree yields three crops annually; the first in April, which is the best; the second in August, and the third in December; yet the fruit is said to require nine months to ripen it. The external coverings being separated, the nut and the mace are carefully dried in the sun; after which, the nuts are immersed in lime-water, and the mace is sprinkled with salt-water, with the view, it is said, of preserving them from the attacks of insects.

# BOTANICAL NOTICES OF NEW PLANTS.

## DICOTYLEDONES.

### ZYGOPHYLLACEÆ.

Guaicum Officinale. Lin. Common Lignum Vitæ. *Bot. Reg.* N. S. t. 9. This is a stove plant, and worthy of cultivation, and but seldom to be seen in collections. Its leaves are of a light bright green, and its flowers, which are abundant, are of a brilliant blue colour.

Whether this is the species which produces the Lignum Vitæ, as is asserted, may admit of some doubt, for it is of extremely slow growth, so as scarcely to be believed that it will form a tree from 40 to 50 feet high, as that of Lignum Vitæ is reported to be. Dr. Macfadyen expressly states that it does not grow more than 12 feet high. The wood is hard and heavy, so as to sink in water: its taste is slightly bitter, and inodorous, but when ignited, gives out a slight fragrant smell. The centre of the wood is an obscure green, and is the part which contains the larger proportion of resin; the outer layer or sap is more yellow, lighter, and contains very little of the resin.

The gum resin, known by the name of Gum Guaicum, is produced from this tree. This gum dissolves entirely in alcohol, and partially in water. Oxalic acid is obtained by treating it with nitric acid. It is obtained either by spontaneous flow, or by incisions; the latter operation is performed in May, and the juice which flows out is concreted by the sun.

Lignum Vitæ is the hardest and heaviest wood that is known, its specific gravity being 1.333. It breaks like a mineral, and can never be split. The latter property is owing to the singular manner in which the woody tubes cross each other diagonally, forming a mass so compact as to have no cleavage.

Guaicum Officinale requires to be grown in a high temperature, with plenty of water to its roots, and showers over its leaves. It succeeds well if potted in a mixture of rich loam and peat, but like most other stove and greenhouse plants, prefers being planted out.

The best time to take cuttings for propagation is early in the spring, when the plant begins to grow. In selecting them, a little of the ripened of the previous year should be left upon them, which prevents them damping off. They may be plunged in bottom heat under a bell-glass, and they will strike root in a few weeks. *Bot. Reg.*

### GERANIACEÆ. Lindl.

Geranium tuberosum, *var.* ramosum. Tuberous Geranium, branched variety. *Bot. Reg.* N. S. t. 10. This is a curious, hardy, herbaceous Geranium, with fleshy roots, about the size of a walnut. It is met with in the kingdom of Naples, which seems to be its most western limits, and it occurs as far to the eastward as the Euphrates, where it was met with in abundance by Col. Chesney. In the fields of Greece, and some of the islands of the Archipelago, it is common; and it occurs to the north as far as the Crimea. The plant now figured was collected by the Hon. W. F. Strangways, near Potenza. It differs from G. Tuberosum, by being branched down to the very base, on which account Dr. Lindley has given it the name of Ramosum, to distinguish it as a peculiar branched variety. It is a hardy perennial, and will grow well in any good garden soil. It bears an abundance of pink flowers, which continue the greater part of the summer. It may either be increased by seeds, or by the division of the roots. *Bot. Reg.*

### HYDROPHYLLEÆ.

Eutoca divaricata. Benth. Straggling Eutoca. *Bot. Mag.* t. 3766. This is a pretty

hardy annual, bearing racemes of large bluish purple flowers, and introduced into our gardens from California, by the late Mr. Douglass. It being of humble growth, both the foliage and flowers suffer from the rain washing the soil over them. *Bot. Mag.*

PLUMBAGINACEÆ.

Statice arborea. Willd. Tree Statice. *Bot. Reg.* N. S. t. 6. This is a stately and magnificent plant, the brilliancy of whose blue neither precious stones nor metallic preparations can approach.

It was introduced by P. B. Webb, Esq., from the Canaries; and according to Von Buch, who visited that place, he found it only in gardens about Orotavia, and he believed it to be extinct in its native place; and, in truth, it is the most local and rare of all known plants. It is only on a few rocks, called the islets of Burgado, which seem as if broken off from the coast of Teneriffe by some violent convulsion of nature, that this rare plant is found, surrounded on every side by the ocean.

The temperature of the climate in which it grows is described as varying between 60 and 86 Fahr., the air being cooled by breezes from the N.N.W., E.N.E.: the sky is seldom overcast, there is little rain, except in November and January, when it falls in heavy showers: the soil is composed of volcanic tufa, basalt, scoria, and sheets of lava, in a state of decomposition. But although the quantity of rain that falls is small, the air of the islets inhabited by Statice Arborea must be constantly moist, in consequence of evaporation from the surface of the sea.

A plant of this species was exhibited at one of the meetings of the London Horticultural Society, from the establishment of Messrs. Luccombe, Pince, and Co., of Exeter, which was six feet high, and covered over with large clusters of flowers, and such was the admiration excited by the beauty of this plant, that it was rewarded with a gold medal: an unusual mark of distinction.

It is well adapted for planting in the bed or borders of a conservatory, and thrives well in an equal mixture of loam and peat, and it flowers from April to June. It strikes freely from cuttings of the young shoots. *Bot. Reg.*

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## MONOCOTYLEDONES.

ORCHIDACEÆ AND VANDEÆ. Lindl.

Maxillaria tenuifolia. Lindl. Slender-leaved Maxillaria. *Bot. Reg.* N. S. t. 8. This is an exceedingly pretty Maxillaria, bearing crimson and yellow flowers. It is a native of Mexico, in the neighbourhood of Vera Cruz, where it was found by Mr. Theodore Hartwig, a naturalist employed by the London Horticultural Society, as a collector in that country.

The freshness and greenness of the leaf when out of flower is so striking as to make it worthy of cultivation, and it is one of the easiest to manage. It succeeds in a warm damp stove in a pot, with a block of wood thrust into the soil, and the long branching rhizoma tied to it. *Bot. Reg.*

Oncidium Forbesii. Hook. Mr. Forbes' Oncidium. *Bot. Mag.* t. 3705. This is certainly a most beautiful species of Oncidium, discovered by Mr. Gardner in the Organ Mountains in the year 1837, and sent by him to his patron, his Grace the Duke of Bedford, Woburn Abbey. It bears a large panicle of flowers, resembling in shape those of O. crispum, but instead of being of a brown colour, the petals and sepals are of a deep scarlet orange bordered with yellow, with white disc spotted with scarlet, at least such are the markings according to the plate above referred to. Its specific name, Forbesii, is in compliment to his Grace's gardener, Mr. Forbes, who has been very successful in the cultivation of numerous plants which have been sent to this country by Mr. Gardner. *Bot. Mag.*

## CALENDAR OF GARDENING OPERATIONS FOR MARCH.

In the plant stove, all tuberous-rooted plants, such as the Gloxinias, Gesnerias, Hedychiums, Zingiber, &c., that have remained dormant during the winter, will require to have the soil shaken from their roots, and repotted into fresh soil.

All other plants, requiring larger pots, may be now also shifted, and the other plants fresh surfaced.

The stove may now be kept at from 65 to 70 degrees of heat during the night.

The plants in the greenhouse must now also be looked over, shifting those that require it, and fresh surfacing all others.

Give plenty of air every fine day, and towards the end of the month; if the weather proves fine, the plants may have a watering overhead, once or twice, so as they get perfectly dry before evening.

Sow for the main crop of Balsams, Browallias, Gomphrenas, Capsicums, and other tender annuals.

Sow seeds of stove and greenhouse plants, either in a hotbed or in the hothouse.

Cuttings of many stove and greenhouse plants may now be put in, more particularly those of a soft woody nature, and such as will be wanted for turning out into the open ground in May, for flowering during the summer and autumn months.

Sow hardy annuals if the month proves favourable, but if cold and wet, they may be left until next month.

Carnations may be shifted into their flowering pots.

Pink beds should be lightly forked over, and a little fresh soil added, if necessary.

Cucumber and Melon frames, and others, requiring a strong, steady heat, must be carefully attended to, and be fresh lined when necessary, as sharp cutting winds frequently cool them rapidly.

# SISYRINCHIUM JUNCEUM.

(*Rush-like Sisyrinchium.*)

LINNEAN SYSTEM. TRIDACEÆ. No. 95. NATURAL ORDER. MONADELPHIA TRIANDRIA.

GENERIC CHARACTER.

Sisyrinchium (Lin.) *Perianthium* sex-partitum regulare. *Filamenta* infrà connata vel distincta. *Stylus* 3-fidus. *Stigmata* simplicia. *Capsula* subglobosa.—*Brown*, *Prod. Flor. Nov. Holl.* p. 304.

*Perianth* in six regular divisions. *Filaments* joined together or separate. *Style* divided into three parts. *Stigma* simple. *Capsule* somewhat globose.

SPECIFIC CHARACTER.

S. juneeum ; *caule* simplici eylindraceo suleato, monophyllo ; *folio* fistuloso ; *spathâ* longissimâ ; *floribus* stipitatis numerosis inearnatis ; *pedunculis* longissimis ; *filamentis* connatis in medio inflatis ; *ovariis* subglobosis hirsutis.

*Stem* simple, cylindrical, furrowed, one-leafed ; *leaf* hollow ; *spathe* very long ; *flowers* stipitate, numerous, pink ; *peduncles* very long ; *filaments* joined, inflated in the middle ; *ovaria* somewhat round, hairy.

Descr.—Bulbous. *Stem* eylindrical, furrowed, about two feet and a half high, sheathed below the leaves. *Leaves* fistulose, solitary. *Spathe* very long, half as long as the stem. *Flowers* with tortuous stalks issuing out of the spathe, at the top of which are three lanceolate scales (involuere ?) with scarious edges, which enclose a portion of the peduneles. *Perianth* of a pleasing pink eolour, having green spots at the base. Divisions of the perianth six, lanceolate, apieulate. *Peduncles* very long, smooth, having at the base of each a scarious braet one-third the length of the peduncle. *Filaments* joined, inflated in the middle. *Anthers* not joined, subsagittate, of an orange eolour. *Pollen* eomposed of oblong cylindrical grains. *Style* divided into three portions towards the top. *Stigma* minute, entire. *Ovarium* situate below the perianth, being triangular, three-eelled, eaeh eell eontaining two seeds. *Seeds* roundish.

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This species of Sisyrinchium differs from all others with which we are acquainted ; and indeed deviates in some respects from the genus, although we imagine that it ought not to be separated. It differs from all the *Sisyrinchia* we have examined, in having stipes issuing out of the spathe, on which are arranged numerous flowers, and also in having three scales (which we have before described) situated at the base of the flowers. This formation we have never before seen in the genus ; on the contrary, the flowers are decidedly those

of *Sisyrinchium*. The perianth is six-parted, and equal, the filaments are connate, the anthers are free, the fruit three-celled and inferior, the style is divided into three parts in the upper part, and the stigmas are entire.

From the above description, we conceive that it cannot be well separated from the genus, but may probably form a sectional division. It is a native of Chili, and was discovered by Mr. Cuming.

Our drawing was made from a specimen in the collection of the Birmingham Horticultural Society, and was raised from seeds presented to that establishment in the year 1832. It is certainly a beautifully-delicate plant, and in habit and root resembles *S. grandiflorum*. From its beauty it merits extensive cultivation, its blossoms being abundant, and continuing for at least two months.

It should be potted in a mixture of peat, sand, and loam, and protected in a cold frame. It may be propagated by offsets, and probably by seeds, but as yet those have not been perfected in the Society's gardens.

This tribe of plants is for the most part peculiar to the New World; two species only are described by Dr. Brown, in his Prodromus of New Holland Plants, as peculiar to that country.

The generic name is formed from συς, a pig, and ῥυγχος, a snout; the specific name from *juncus*, a rush, in reference to its rush-like appearance.

# ERYSIMUM PEROWSKIANUM.

(*Perowski's Erysimum.*)

LINNEAN SYSTEM.
TETRADYNAMIA SILIQUOSA.

No. 96.

NATURAL ORDER.
CRUCIFERÆ.

GENERIC CHARACTER.

Erysimum (Gært.) *Siliqua* tetragona. *Calyx* clausus. *Cotyledones* planæ, oblongæ. (*De Cand. Prod. vol.* i. p. 196.)

*Siliqua* four-sided. *Calyx* closed. *Cotyledons* flat, oblong.

SPECIFIC CHARACTER.

E. Perowskianum; annuum: *foliis* petiolatis lanceolatis remotè serratis. *Petalis* obovatis, *siliquis* arcuatis. *Stigmatibus* subglobosis crassis.

Annual: *leaves* petiolate, lanceolate, remotely toothed; *petals* obovate; *seed-vessel* bowed; *stigmata* somewhat globose, fleshy.

Erysimum Perowskianum, *Fisch et Meyer*, Ind. Quant. Sem. Petropol. p. 36.

Descr.—*Stem* annual, about eighteen inches high, slightly branched, covered over with close appressed hairs; *leaves* alternate, petiolate, lanceolate, remotely toothed, minutely covered with forked hairs; *flowers* large, yellow, capitate, shortly pedunculate; *petals* obovate, margin entire, unguis as long as the calyx; *calyx* greenish, covered with appressed hairs; *filaments* smooth, flat, the longest reaching to the apex of the stigma; *anthers* greenish, linear, joined to the filaments nearly at the base, and affixed in a nearly upright position; *style* somewhat pubescent, one third of the length of the siliqua; *stigma* large capitate, fleshy; *siliqua* four-sided, somewhat pubescent; *seeds* oblong, covered with a brown pellicle.

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This species belongs to the third section (*Erisymastrum*) of De Candolle's system. It is allied, according to Fischer and Meyer, (from whom it received its name,) to *E. altaicum*, *ochroleucum*, *canescens*, *Andrzejoskianum*, *exaltatum*, and *robustum*. From *E. altaicum* and *ochroleucum* it differs in its duration, being only annual, and the unguis of the petals not exceeding the length of the calyx, also in having the hairs on the siliqua forked, and the style more elongated. By almost the same characters it may be distinguished from *E. canescens*, *Andrzejoskianum*, and *exaltatum*. From *E. robustum* it is separated by its hairs being forked, not three or four parted. Such are the distinctions published in the seed list of the St. Petersburgh Garden, some of which we think are entitled to little notice.

This is a pretty, hardy annual, bearing a profusion of orange-coloured flowers, which are of a size much larger than are usually found in this genus. It is a

native of Palestine, and is growing in the Birmingham Botanic Garden, where it was raised from seeds sent to that institution, by Dr. Fischer of St. Petersburg.

It requires no care in cultivation, any soil and situation being suitable.

This genus is almost exclusively European, and contains about fifty species.

Their properties are pungent and acrid, having also the power to inflame and blister the skin.

They are of no use as articles of food or medicine.

The generic name, *Erisymum*, is formed from the Greek ἐρύω (*eryo*), to draw, in reference to the power it possesses of producing blisters. The specific name is in compliment to Mr. Perowski, a Russian botanist.

# ONCIDIUM LURIDUM; *var.* HENCHMANNI.

(*Mr. Henchman's Oncidium.*)

LINNEAN SYSTEM.
GYNANDRIA MONANDRIA.

No. 97.

NATURAL ORDER.
ORCHIDACEÆ § VANDEÆ.

GENERIC CHARACTER.

Oncidium (SWARTZ). *Perianthium* explanatum. *Sepala* sæpiùs undulata; lateralibus nunc sub labello connatis. *Petala* conformia. *Labellum* maximum, ecalcaratum, cum columna continuum, variè lobatum, basi tuberculatum vel cristatum. *Columna* libera, semiteres apice utrinque alata. *Anthera* semibilocularis, rostello nunc abbreviato, nunc elongato rostrato. *Pollinia* 2, postice sulcata, caudiculâ planâ glandulâ oblongâ. Herbæ *epiphytæ*, nunc pseudobulbosæ. *Folia* coriacea. *Scapi* paniculati vaginati, rariùs simplices. *Flores* speciosi, lutei, sæpiùs maculati, rarò albi.

*Perianth* explanate. *Sepals* more frequently undulate; the lateral ones sometimes connate beneath the labellum. *Petals* similar in form. *Labellum* very large, spurless, continuous with the column, variously lobed, tuberculated or crested at the base. *Column* free, semiterete, with the apex winged on both sides. *Anther* half 2-celled, rostellum sometimes short, sometimes elongated, beaked. *Pollen-masses* two, furrowed behind, with a flat caudicula and an oblong gland. *Epiphytic plants* sometimes with pseudobulbs. *Leaves* leathery. *Scapes* panicled, sheathed, more rarely simple. *Flowers* handsome, yellow, most frequently spotted, rarely white.

SPECIFIC CHARACTER.

O. luridum; *foliis* oblongis acutis rigidis carnosis; *scapo* paniculato multifloro; *sepalis petalisque* undulatis obovatis, superioribus obtusis inferioribus acutis; *labelli* lobis lateralibus nanis obtusis intermedio undulato transverso emarginato; *cristâ* tuberculis 2 ad basin, 2 majoribus intermediis callisque tribus cruciatis à fronte; *columnæ alis* unguiculatis rotundatis brevibus.—*Lindl.*

*Leaves* oblong, acute, rigid, fleshy; *scape* panicled, many-flowered; *sepals* and *petals* undulate, obovate, the upper obtuse, the lower acute; lateral lobes of the *lip* small, obtuse, the intermediate one undulate, transverse, emarginate; *crest* with two tubercles at the base, two larger ones intermediate, and three callosities cruciate in front; *wings of the column* unguiculate, rounded, short.

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Such is the character of *O. luridum*, compared with which this very handsome variety appears to present so many striking features of difference, that we fully expected to find it a distinct species. The *leaves* are shorter, more obtuse, and more fleshy than those of *O. luridum;* and much more resemble those of *O. lan-*

*ceanum*, except that they are of a more lively green, and not spotted. The *scape* is much shorter, and more pendulous. The *flowers*, though smaller, are much more richly marked; the lip being of a fine crimson, with a yellow border; the sepals and petals of a reddish purple, edged with yellow, and marked with blotches of crimson.

It is in the collection of Messrs. Low and Co., of Clapton nursery, to whom we are obliged for the loan of a very accurate drawing from the pencil of Mrs. Withers.

A plant communicated by Messrs. Low and Co. to Messrs. Loddiges flowered last season, and (although separately imported) quite maintained its character; and we are informed by Mr. Henchmann, that Mr. George Loddiges, who had an opportunity of seeing both specimens in flower, considers it to be decidedly distinct from *luridum*, which we think by no means improbable. We are, however, obliged to confess that, after the most careful examination of its flowers, we are unable to fix upon any point of structure sufficiently different from *luridum* to warrant us in considering it a distinct species.

It is a native of Mexico, and was received from the neighbourhood of Real del Monte, by Messrs. Low and Co., of Clapton nursery, in 1837.

It requires the same treatment as *O. luridum* and its allies.

## ON THE CAUSE OF CANKER IN APPLE TREES.

BY D. CAMERON, A.L.S.

(*Continued from p.* 9.)

The best, and indeed the only remedy for Canker, is carefully to drain the ground where the trees are planted, so as to make the soil drier and warmer, by which means the trees send out their roots at an earlier period. It would also be advantageous to plant the trees on a raised mound. In such situations they ought also to be kept thin of wood by pruning, so that the roots may have fewer branches to support. Another cause of canker, even in favoured situations, upon a dry and warm bottom, sometimes arises from severe late frosts, after the sap is in motion; when the sudden transition from a cold frosty night, to the clear sunshine of the following day, often causes a bursting of the rind, in some parts of the trees. Such injured portions should be immediately cut out, in order to prevent their ending in canker. In orchards, the effects will be confined, in a great measure, to those trees growing on the south-eastern side; each tree breaking, in a considerable degree, the rays of the sun from those behind, and thus receiving the injury which the others would otherwise sustain. It is evident, therefore, that if some tall fast-growing trees were planted at a sufficient distance from the apple-trees, upon the south-eastern side, so as to break the force of the sun's rays in the morning, this injury might in a great measure be prevented; but no such remedy can be applied to apple-trees growing in kitchen gardens, standing detached from each other. Canker may also be produced by the presence of iron, or some other pernicious ingredient, in the soil of particular districts, which corrodes the roots in various places, and thus prevents the necessary supply of sap. As this is most frequently caused by the sub-soil, care should be taken to prevent the roots from penetrating into it, and when they have got into it, the tree should be taken up, and have all the cankered roots cut off, lightening the tops at the same time before replanting, by pruning out some of the branches.

These are the chief causes of canker, which have come under my own observation; but there are probably many other circumstances, arising from peculiarity of soil and situation, which may tend to produce the same injurious effects.

## ON THE IRRITABILITY OF PLANTS.

One of the most prominent features indicative of the existence of a vital principle in plants, is the remarkable property they possess of being acted upon by external *stimuli*, a property which seems to approach, in its character, to that manifested by the animal creation. This curious and interesting subject has

occupied the attention of many distinguished vegetable physiologists, particularly Desfontaines, Smith, Sprengel, Marcet, Macaire, and Dutrochet. The obvious movements in plants, resulting from what is usually termed their *irritability*, may be excited by atmospheric causes, such as light and heat; or by the actual contact of other bodies. The expansion of the flowers of the common crocus under the influence of the sun, and their speedy closure when that influence is withdrawn; the shutting up, at the approach of night, of many flowers, which re-open on the return of morning; these and many other similar facts may be regarded as illustrations of the effect of atmospheric or natural *stimuli*. A striking and well-known example of the excitability of plants by artificial stimuli, or actual contact, is afforded by the sensitive plant, *Mimosa pudica*, which shrinks and folds up its leaflets on the slightest touch. Another and no less curious instance presents itself in the *Dionæa muscipula*, (Venus's Fly-trap,) the leaves of which are so sensitive, that, should the centre of one of them be touched by a fly or other insect, its sides instantly collapse like a steel trap, and detain the little animal a prisoner. But besides these two kinds of irritability, there are other movements observed in plants, which are apparently independent of any direct stimulus, and which, being actually spontaneous, are in their character still more analogous to animal excitability. Many instances of this spontaneous irritability might be mentioned, but the more immediate object of the present paper is to notice especially the movements of the sexual organs.

The stamens of a great number of plants are found to manifest this power of movement about the period of fecundation: it may be observed in *Liliaceous* plants, in the different species of *Saxifraga*, and *Parnassia*, the stamens of which at this time approach the pistil. In the *Geranium* and the *Kalmia*, the filaments bend down for the purpose of laying the anthers upon the stigma. In the *Pink* and in the *Rue*, the stamens approach the stigma successively; commencing with those which are opposite to the petals, and terminating with those which are alternate. In the *Nasturtium* the eight stamens incline towards the stigma, each in its turn, with a sort of regularity, during eight hours. In the *Tobacco plant* the action is different: all the stamens approach the stigma at the same time. The stamens of *Amaryllis aurea*, at the period of fecundation, are oftentimes so much agitated as to resemble an automaton movement. In some instances a movement of these organs may be readily excited by mechanical stimuli, as in *Berberis vulgaris*, the common Barberry, the stamens of which, when touched near their base by the point of a needle, spring up elastically and strike the stigma. The same fact may be observed in some species of *Chenopodium;* in the tube of the anthers of many *thistles;* and in the filaments of the *opuntiæ*. The sexual apparatus of many orchidaceous plants also offer striking instances of irritability, as in *Cirrhæa*, *Myanthus*, and *Catasetum*.

This movement or irritability is less apparent in the stigma than in the stamens of flowers, although it may be observed in many instances. The stigma

of the *Passiflora*, the *Lily*, and the *Epilobium*, incline against the stamens; those of the *Tulip*, the *Martynia*, and the *Gratiola*, dilate and become open in a very remarkable manner: the stigma of the *Mimulus* also opens, but, on the least mechanical irritation, it again closes. The same movement may be observed when the stigma has been recently separated from the style.

The *Stylidium* presents a kind of excitable movement, which is also very remarkable. This singular plant has the style joined its whole length with two filaments of the stamens: the appearance of this column is unique, being terminated by a glandular stigma surrounded by the four lobes of the two anthers. In the young state of the flower, when the anthers are not opened, the column is not excitable, but when the flower has arrived at perfection and the anthers are open, the column is singularly irritable; for on shaking the flower, or irritating its column (which in its natural state is bent to one side of the corolla), it instantly springs to the opposite side, from which after a certain time it returns to its original position, and may be again excited in a similar manner. It is found to be most sensitive when exposed to the rays of the sun.

This movement of the stamens appears to be designed for the purpose of facilitating and effecting with certainty the discharge of the pollen from the anthers; and consequently to add to the number of causes which tend to ensure fecundation. The stigma concurs in the same object, either by approaching the anthers, or in dilating and offering a more extended surface for the reception of the pollen. Such explanation however can scarcely apply to the *Stylidium*, the anthers of which are already in contact with the stigma; and no plant appears to have less use for any particular precaution to ensure fecundation. Mr. Salisbury suspects that the use of this movement is to drive away insects which may attempt to insinuate themselves into the flower. Mr. Hensel has remarked that these movements are under the influence of external circumstances: he states that if the flower be made wet, the movement will not take place; and if begun, it will be interrupted. But in admitting the truth of this observation, it by no means militates against the theory of excitable vitality.

## PALMACEÆ.

Among the various natural orders of plants, the *Palmaceæ* appear to stand pre-eminent. Linnæus, in the warmth of his admiration, called them the princes of the vegetable kingdom; and, assuredly, when we take into consideration the grandeur of their towering, and generally simple stems, the beauty of the clustered, and usually gigantic foliage, which crowns their summits, and the air of magnificence with which they stamp the tropical landscape, they may with justice be said to form a noble and distinguished family. But, independently of their

lofty and majestic port, they are of immense importance to mankind, and more especially to the inhabitants of the countries in which they grow. Their stems, their leaves, and their fruits, are all applied to innumerable purposes; affording food, raiment, shelter, and supplying materials for the construction of weapons, implements, and various other articles both of comfort and utility.

They are, as Dr. Lindley observes *, very uniform in the botanical characters by which they are distinguished, especially in their fleshy, colourless, six-parted flowers, enclosed in spathes, their minute embryo lying in the midst of albumen and remote from the hilum, and their arborescent stems with rigid, plaited or pinnated, inarticulated leaves, called fronds, but their aspect and habits are extremely various. Some are slender, as the reed, and of an extraordinary length,—*Calamus rudentum*, the cable-cane, having been seen 500 feet long; others acquire a considerable thickness. Some grow naturally in groups, others stand singly. Some, with a stem not exceeding three or four inches in diameter, attain a height of 60 feet; others, as slender in proportion, are seen 150 and 200 feet in height. Some delight in valleys and the banks of rivers, while others present themselves in mountainous districts at very considerable elevations.

They form a very numerous family, the species being supposed by Von Martius to amount to no less than one thousand. This, however, is mere conjecture, as the number at present known does not exceed one hundred and seventy-five. Of this number one hundred and nineteen have been found in South America, forty-two in India, and fourteen in Africa.

Palms are supposed to have existed at a very early period. In reference to this opinion Dr. Lindley, in his work already quoted, remarks, that "if palms were not, as some say, among the earliest plants that clothed the face of the globe, none of their remains existing, mixed with the ferns and calamites of the old coal formations, it is at least certain that their creation dates long before that of the present Flora of the globe. But it is probable that they actually did exist at the most remote periods, for the *Nöggerathia foliosa* of Sternberg, from the coal-fields of Bohemia, seem really to have been a palm. Adolphe Brongniart refers two other fossils of the same epoch to this family, and I have produced in the Fossil Flora proofs of their fruits being traceable in the shale of the old coal formations. No one doubts that they appeared immediately after the development of *Cycadaceæ* ceased in European latitudes, and that of *Coniferæ* took a more decided form; as we find unquestionable traces of them in those deposites above the plastic clay which Brongniart calls *marno-charbonneux*.

The natural productions of the *Palmaceæ* are so various and important, that a brief notice of some of the more remarkable species cannot but prove interesting to those who are unacquainted with the nature and properties of this family.

*Phœnix dactylifera* is a lofty palm, with leaves, when fully grown, from six

* Natural System of Botany.

to eight feet long. The fruit of this tree is the well-known date, which forms so common an article of food among the inhabitants of Egypt, Arabia, and Persia; it is stated indeed by Dr. Clarke, that they subsist almost entirely on this fruit, of which the quantity borne by each tree is prodigious. A single date-palm will bear more than a hundred-weight, and not unfrequently between two and three hundred-weight, of dates in a season. They begin to bear fruit when about seven years old, and are said to be fruitful for upwards of two hundred years.

*Corypha umbraculifera*, the majestic talipot palm, is a most remarkable species, and is thus described by Knox, in his History of Ceylon, of which country it is a native:—"As big and as tall as a ship's mast, and very straight. The leaves are very large, some capacious enough to cover from fifteen or twenty to thirty or forty men; these are of great use, for being, when dried, very strong and limber, though very broad when open, yet they will fold close like fans, and are then no bigger than a man's arm. The whole leaf-spread is round, but it is cut into triangular pieces for use; these the natives lay upon their heads when they travel, with the narrow end foremost, to make their way through thickets. The soldiers there all carry these umbrellas, not only to shade them from the sun, and to keep them dry in case of rain on their march, but when set on-end, to make tents for them to lie under. A magnificent crown of these leaves, as is usual with palms, terminates the stately column, 100 feet in height, which is formed by the trunk. The talipot bears no fruit until the last year of its life, and then yellow blossoms, most lovely to behold, but smelling very strong, come out on the top, and spread abroad in great branches. The fruit is in such abundance, that one palm will yield seed enough to stock a whole country; the berries are round and hard, the size of our largest cherries, but not good to eat. The trunks when young are full of a mealy pith-like substance, which is beaten in mortars, and cakes made of it, that have very much the taste of ordinary white bread. The leaves are used instead of thatch for roofing houses, and also for writing on with an iron style. Most of the books shown in Europe for the Egyptian papyrus are made from the leaves of this palm.

There are other species of *Corypha* which are also plants of great importance; as *C. Taliera*, a magnificent species growing in Northern India, and applied by the natives to various economical purposes; *C. rotundifolia* is valuable for the amylaceous food (a kind of sago) which it produces; *C. cerifera*, a native of Brazil, yields a wax-like matter, to which its specific name, *cerifera* (wax-bearing), refers.

The genus *Cocos* is one of immense importance to the inhabitants of the countries in which it grows. There are several species, but the most remarkable, and indeed the most valuable, is *C. nucifera*, the cocoa-nut palm, a native of, and cultivated extensively in, many tropical countries. Its simple, cylindrical trunk, grows to a great height, crowned at the top with its fine, clustered leaves, which are

often ten, twelve, and even fifteen feet in length. The flowers are also produced in large clusters around the top of the stem, succeeded by large nut-like fruits, ten or twelve together. These nuts are too well known to require any description; they afford an abundance of food, and the milk contained within the hollow kernel is considered a most refreshing beverage. The pericarp or husk which invests the nut is also of immense value; it is about an inch thick, of a fibrous texture, the fibres of which, being tough and readily separable, are manufactured by the natives into cords, cables, and various kinds of cloth. Of these fibres also, as well as of those of the leaves, they fabricate mats and carpets of a beautiful and costly quality. The shells are converted to various useful purposes by the natives, who form them into cups, bottles, boxes, and other articles both of ornament and utility. The kernel, when ripe, yields abundance of oil, which during the last few years has become an important article of commerce. The mid-ribs of the leaves are converted into oars; the leaves themselves are used in thatching and fencing; they are burnt as fuel, and from the residue is obtained potash. The unexpanded buds are esteemed as a delicacy: when these buds are removed a quantity of sap exudes, which is carefully collected, and sold in the bazaars under the name of *toddy*. This juice, when fresh and unfermented, is a grateful and wholesome beverage; but as it contains a large proportion of sugar, it readily undergoes fermentation and produces an intoxicating liquor, from which is obtained by distillation a spirit called Pariah arrack. Lastly, the stem is rendered useful in various ways: when young it yields a nutritious, farinaceous food; when old it becomes exceedingly hard, and is converted into a variety of utensils, weapons, &c. Swords and arrows made of this wood, will, it is said, pierce through iron cuirasses. It is used as timber for building and other domestic purposes; and transverse sections of it are frequently employed for constructing drums. There are other species of *cocos*, which are also converted to various useful purposes.

The genus *Areca* contains several species, one of which, *A. catechu*, is extensively cultivated in the East Indies. It produces the *betel-nut*, so generally used by the natives as a masticatory. A slice of betel-nut, wrapped in the aromatic leaf of the betel-pepper, is very generally chewed like tobacco by the natives, whose mouths and teeth are deeply tinged by the practice. It is said however to preserve the teeth, to render the breath sweet, and to act as a tonic and stomachic. From the fleshy part of the fruit an astringent extract is procured, and sold as a kind of catechu. *Areca oleracea*, the cabbage-palm of the West Indies, has acquired its specific name from the practice of cutting off the young buds and cooking them like coleworts; as such they are esteemed a great delicacy. It is the loftiest of the American palms, rising occasionally to the height of 160 and even 200 feet.

The genus *Elais*, the oily-palm, derives its name from a Greek word, meaning *oil* or *olive*. *Elais Guineensis* yields the well-known palm-oil, large quantities of which are imported from Africa. This substance is expressed from the fleshy

pericarpial covering of the fruit, in the same manner as olive-oil is obtained from the olive. It is of a solid consistence, of a rich orange yellow colour, and has an agreeable odour, not unlike that of the Florentine orris-root

The genus *Sagus* is valuable as producing largely, though not exclusively, the well-known article called sago. When the trees have acquired sufficient growth, they are cut down, divided into convenient lengths, and the feculent pith in the centre carefully washed out with water; the water is allowed to stand for a while; the feculent powder subsides, and when dried constitutes sago. To give it that granular form in which it is usually sold in the shops, it is made into a paste and passed through a kind of sieve. In this form it is often called "pearl sago." Some of the finest sago of Molucca is said to be obtained from *Sagus lævis*. Large quantities are stated to be procured from *Sagus farinifera*, but of inferior quality. According to Dr. Hamilton, *Saguerus Rumphii* produces remarkably fine sago. Indeed there are very few species of the palm tribe which do not yield more or less of this nutritive substance.

It would however take up too much space to enumerate and describe all the species of this noble family which are useful to mankind. It must suffice, therefore, to state that their productions comprise wine, oil, butter, milk, cream, flour, sugar, salt, and other articles of food of various kinds, and in prodigious quantities. But even this compressed account must tend to show the value and importance of the Palmaceæ.

## BOTANICAL NOTICES OF NEW PLANTS.

### DICOTYLEDONES.

#### COMPOSITÆ.

Dracopus amplexicaulis. Cafs. Amplexicaul Dracopus. *Bot. Mag.* t. 3716. This is an annual possessing no beauty for the ornamental flower-garden. It is a native of North America, and was raised from seeds sent to this country by Mr. Drummond, who gathered them at Texas. It blossoms in July and August. *Bot. Mag.*

#### TROPEOLEÆ.

Tropeolum tuberosum. Ruiz et Pav. Tuberous-rooted Indian Cress. *Bot. Mag.* t. 3714. This interesting species of Indian Cress has large tuberous roots, which are eaten daily by the Peruvians. In 1836, tubers were sent from John M'Lean, Esq. to Mr. Murray, of the Glasgow Botanic Garden; and by whom they have been extensively cultivated. It proves quite hardy, but our summers are not long enough to make it flower freely, for the flowers are mostly nipped by the frost. It will therefore require a little forcing to bring the flowers to maturity. The specimen from which the drawing was taken, flowered in the Belfast Botanic Garden, in 1838. *Bot. Mag.* In the first volume of the Floral Cabinet, we inserted some important observations on this plant, which were supplied us by Mr. Cameron, Curator of the Birmingham Horticultural Society, and to which we wish to refer our readers.

#### LABIATÆ.

Torenia cordifolia. Roxb. Heart-leaved Torenia. *Bot. Mag.* t. 3715. This is a pretty annual bearing bluish lilac flowers. According to Dr. Roxburgh, it is a native of the

moist pastures about Samuleottah, in the Northern Circars. It flowered in the stove of the Royal Botanic Garden, Edinburgh, in October, 1838. The seeds were sent from Saharampoor by Mr. Falconer. *Bot. Mag.*

CARYOPHYLLEÆ. De C. SELENACEÆ Lindl.

Dianthus ferrugineus. Lin. Yellow Pink. *Bot. Reg.* t. 15. This is a pretty herbaceous plant bearing yellow flowers; a colour rather uncommon, the usual colour being pink or white.

It is allied to *D. Carthusianorum*, but differs in having squarrose bracts, and the smooth edge of the leaves, as well as the colour of the petals.

Whether it is to their intermixture with this, or the little known *D. ochroleucus* of the Levant, that some of the more precious varieties of Piecotees and Carnations owe their yellow, is unknown.

The seeds from which this plant was raised were brought from the Botanic Garden, Florence, by the Hon. W. F. Strangways.

This plant grows from twelve to eighteen inches high in any light rich soil, and rather a dry situation, flowering about July and August. It may be increased either by seeds sown in the spring, or by pipings in autumn; but like *Dianthus Libanotus* it suffers very much, and is often entirely destroyed, if not protected from the wet in autumn and winter by a hand-glass. It is a native of Calabria, the Abruzzi, and other parts of the kingdom of Naples. It is also said to be a native of the Apennines.

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## MONOCOTYLEDONES.

IRIDEÆ.

Marica gracilis. Herb. Slender Marica. *Bot. Mag.* t. 3713. This is a very delicate plant, bearing flowers of a whitish blue colour. It was received at the Glasgow Botanic Garden, from the noble collection at Woburn, where it has long been cultivated. It was imported from Brazil, by Mr. Forbes, who grows it in the greenhouse. It is distinct from *M. Northiana* in being much slenderer in every part, the partial spatha particularly long, narrow, and acuminated, and the outward sepals narrower. Mr. Herbert observes that this exhibits three erect lobes to each division of the stigma, whereas Mr. Ker represents and describes *M. Northiana* as having only two erect lobes to each. *Bot. Mag.*

AMARYLLIDACEÆ. Juss.

Alstromeria Ligtu. Linn. The Ligtu. *Bot. Reg.* t. 13. This is a very handsome species of a lilac colour, having the upper petals marked with crimson and yellow. This species is characterised by its long branched peduncles, obovate or obcordate sepals, which are also but little, if at all, serrated.

It has the name of Ligtu, because it is called Ligtu in Chili. "This plant," says Dr. Lindley, "probably exists in many gardens, although not distinguished from either *A. pelegrina* or *pulchra*. The former," says the above author, "differs in its short, one-flowered, rigid peduncles: the latter in its shorter flowers, and spathulate rather than obcordate serrated sepals." It was figured from a plant in the possession of Charles Barclay, Esq., Bury Hill; and was exhibited at one of the great meetings in the Gardens of the Horticultural Society, where it was conspicuous, among many beautiful species, for the delicacy of its flowers and its large size. *Bot. Reg.*

ORCHIDACEÆ AND VANDEÆ.

Maxillaria Vitellina. Lindl. Yellow Maxillaria. *Bot. Reg.* t. 12. This is a Brazilian Epiphyte allied to *M. racemosa*, which differs in having an undivided labellum, hairy

column, &c. It is also related to *M. aureo-fulva*, which was figured in the Floral Cabinet, a few numbers back; from that it differs in not having an acuminate lip, as well as in the form and colour of the sepals and petals. Dr. Lindley does not state whether it has a *double* caudicula, a structure so evident in *M. areo-fulva*. It is in the collection of Messrs. Loddiges, with whom it flowered in June, 1838.

It requires the temperature and humidity of the moist stove. After it has perfected its pseudo-bulbs for the season, it should be kept dry for a considerable length of time; and if convenient, moved to a cooler house. By these means it will grow and flower more freely, when it is brought back to the moist stove. *Bot. Reg.*

Huntleya meleagris. Bateman. Speckled Huntleya. *Bot. Reg.* t. 14. This is certainly a most beautiful Epiphyte, bearing solitary flowers of orange, red, and yellow, tessellated with purple, and which are about three inches across. It is also one of the rarest of Epiphytes, having only been seen in the collection of Messrs. Rollison, Tooting, and from which Dr. Lindley's drawing was made.

This charming plant is found in gloomy damp woods, on the banks of the Rio de Pirapitinga, in the district of Bananat. It is scentless, and flowers in June.

It thrives well in an atmosphere saturated with moisture, where in winter the temperature is 60 to 70, and in the summer, from 70 to 90.

The house requires to be shaded from bright rays of the sun, and from having fleshy roots should be frequently syringed with water.

Oncidium luridum, *var.* guttatum. Lindl. Mr. Boyd's Oncidium. *Bot. Reg.* t. 16. This is a very handsome Oncidium, not very much unlike *O. intermedium*, published in the Floral Cabinet. *O. luridum*, var. *guttatum* has orange-yellow sepals, petals, and labellum, spotted wtih orange-red; the disc of the labellum is crimson, the column and wings appear to be white.

It was imported from Jamaica by Messrs. Rollison, and is in their possession. It requires to be cultivated in a moist stove heat, either suspended from the roof, or elevated above the surface of the pot, and its roots frequently syringed. *Bot. Reg.*

Maxillaria stapelioides. Link. et Otto. Stapelia-like Maxillaria. *Bot. Reg.* t. 17. This is a very singular and pretty Maxillaria, having a ground of a greenish colour, tinted with purple. It is in consequence of the singular markings that it has received the name of Stapelioides. It is a native of the Organ Mountains, where it was discovered by Mr. Gardner. It is also found in Brazil, whence it was sent to the Berlin Garden; where it was named. *Bot. Reg.*

## EPIDENDREÆ.

Cattleya intermedia, *var.* angustifolia. Hook. Narrow-leaved intermediate Cattleya. *Bot. Mag.* t. 3711. This is, like all the species and varieties of the genus Cattleya, beautiful. It is very nearly allied to *Cattleya intermedia*, from which it is said to differ in no essential particular, although sufficiently distinct as a variety to warrant a plate. *Bot. Mag.*

## CALENDAR OF GARDENING OPERATIONS FOR APRIL.

Stove plants ought now to be looked over, and those shifted that require it.

Some of the plants in large pots will require their balls reduced, and to be put into smaller pots until they make fresh roots.

Many of the greenhouse plants will also require shifting into larger pots, *particularly* those that have been kept during the winter in sixty-sized pots; they should now be put into pots of a larger size, and in soil suitable for the different genera:—sandy peat for Ericas, Epacrises, and kindred genera; rich loam and rotted dung and sand for most of the Pelargoniums. Loam, peat, and sand, will suit many Cape and New Holland plants.

Fumigate the houses wherever the green fly makes its appearance, and syringe over head occasionally in the greenhouse if the weather prove clear.

Attend to transplanting Balsams, Cockscombs, and other tender annuals, and when established and the pots filled with roots, they must be shifted into larger-sized pots. The peat of the hotbeds, where they are placed, must be kept up by fresh linings when necessary, much of the success of having them fine depending upon keeping them growing luxuriantly, without check, either for want of heat or pot room.

Pot off cuttings of greenhouse plants put in last month; and after being established, harden them gradually for removal into the greenhouse or cold frames.

Many Alpine plants in pots will now require fresh shifting, and the pots of those that do not must be fresh surfaced.

Layer American plants; dig herbaceous beds, reducing the luxuriant kinds into smaller patches, and divide those that are wished to be increased.

Attend to the starting and propagating Dahlias.

Continue to sow annuals in the open ground, to keep up a succession of their flowers through the season.

1 2 3 4

R. Wills del

# LEONTICE CHRYSOGONUM.

(*Golden-flowered Leontice.*)

LINNEAN SYSTEM.
HEXANDRIA MONOGYNIA.

No. 98.

NATURAL ORDER.
BERBERACEÆ.

GENERIC CHARACTER.

Leontice. (Lin.) *Sepala* 6, extùs nuda. *Petala* 6, intus basis quammulam gerentia. *Capsula* vesicaria 2-4 sperma. *Semina* in fundo capsulæ inserta globosa. *Herba*, radice tuberosâ; foliis variè sectis. *Calycibus* sæpe coloratis. (*Decand. Syst.* vol. ii. p. 23.)

*Sepals* 6, externally naked. *Petals* 6, internally bearing a scale at the base. *Capsule* bladdery, two to four seeded. *Seeds* globose, inserted at the base of the capsule. *Herbaceous plants*, tuberous-rooted. *Leaves* variously divided. *Calices* frequently coloured.

SPECIFIC CHARACTER.

L. Chrysogonum; *foliis* pinnatisectis; *segmentis* sessilibus, ovali-oblongis, apice 3-5 fidis; *bracteis* parvis scariosis; *stamina* petalis fere æqualia.

*Leaves* pinnatifid; *segments* sessile, ovate-oblong, three to five toothed at the apex; *bracts* small, scarious; *stamens* almost the length of the petals.

Leontice chrysogonum.—*Lin.*

Bongardia rawolfi.—*Bunge.*

Descr.—*Root* tuberous, stemless. *Leaves* blotched, pinnately divided, each segment three-toothed at the apex. *Scape* about eight inches high, branched. *Peduncles* simple or branched, about three inches long, pedicels about one inch long. *Bracts* scarious, situate at the base of the peduncles, bracteolæ at the base of the pedicels. *Flowers* yellow, solitary. *Sepals* six, obovate, yellow. *Petals* six, in colour and form similar to the sepals. *Stamens* six, situate opposite to the petals, and arranged on the torus, longer than the styles. *Anthers* two-celled, joined at their base to the summit of the stamens. *Style* short. *Stigma* crested. *Ovarium* bladdery, one-celled, conical, and containing about four pear-shaped stipitate seeds.

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This is an exceedingly pretty plant; which, from its elegant foliage and rich yellow flowers, is worthy of a place in every choice collection. Its root is also valuable as an article of food, and is much esteemed by the natives of Persia and the Levant. Our drawing was made in the year 1837, from a plant in the collection of the Birmingham Horticultural Society, which was raised from tubers sent to that establishment by Dr. Fischer, of St. Petersburgh.

This genus contains five species, three of which are natives of the Eastern hemisphere, and inhabiting Greece, Candia, and Tartary; the others are natives of Siberia and North America.

This is a frame perennial, and should be potted in loam and sand, using plenty of drainers. It may be placed out of doors amongst the Alpine plants during the summer, and have the protection of the cold frame during the winter. It ought to have but little water during the dormant state ; or perhaps it would be better if the tubers were taken up and kept dry for two or three months. It appears to be a difficult plant to cultivate.

The order *Berberaceæ* comprises six genera, of which the genus *Berberis* is by far the most important, and contains the greatest number of species. *B. vulgaris* affords a most grateful acid fruit, from its containing a small portion of oxalic acid, for which property it is often preserved. The fruit of *B. aristata* and *B. Nepalensis* is so esteemed by the mountaineers of India, that they dry it and send it into the plains for sale.

The *B. tinctoria* affords a valuable yellow dye, which is used for the purpose of dyeing either leather or cotton. The bark also possesses bitter and astringent properties, in consequence of which it has been received into the list of medicinal plants. The stamens of this genus are also worthy of attention from their excitability. If touched on the inside with a needle, or any other hard substance, they will bend to the stigma, but recover themselves if left at rest for some time, when they may be excited again in the same manner. The best time to perform this experiment is on a fine sunny day. This peculiar property is destroyed either by corrosive or narcotic poisons ; the one makes them hard and brittle, the other soft and flaccid, thereby producing an effect on vegetable life analogous to that on the animal kingdom.

The generic name *Leontice* is from the Greek Λεοντικὴ, wild chervil ; its specific name *Chrysogonum* applies to the golden colour of its flowers.

Fig. 1, a flower with the sepals and petals removed to show the filaments and anthers ; 2, shows the orbicular stigma ; 3, germ, with the seeds ; 4, section of a seed-vessel.

# HOITZIA COCCINEA.

(*Scarlet-flowered Hoitzia.*)

LINNEAN SYSTEM.
PENTANDRIA MONOGYNIA.

No. 99.

NATURAL ORDER.
POLEMONIACEÆ.

## GENERIC CHARACTER.

Hoitzia (Juss.) *Calyx* tubulosus, quinquefidus æqualis. *Corolla* infundibuliformis ; limbo quinquepartito subæquali. *Stamina* quinque æqualia exserta. *Capsula* trilocularis trivalvis, *calyce* persistente tectâ ; loculis oligospermis. *Semina* compressa nuda externè mucilaginosa. *Frutices* foliis alternis solitariis serratis. *Floribus* axillaribus solitariis bracteatis ; corollis coccineis aut violaceis.—*Kunth, Lyn. Plant. Æquinoct.* vol. ii. p. 258.

*Calyx* tubulose, divided into five equal parts. *Corolla* funnel-shaped, limb somewhat equally five-parted. *Stamens* five, equal, projecting beyond the corolla. *Capsule* three-celled, three-valved, crowned by the persistent calyx. *Cells* few-seeded. *Seeds* compressed, naked, externally mucilaginous. *Shrubs* with alternate leaves, solitary, serrated. *Flowers* axillary, solitary, bracteate. *Corolla* scarlet or violet.

## SPECIFIC CHARACTER.

H. coccinea ; *foliis* sessilibus ovatis ; *floribus* axillaribus solitariis brevissime pedunculatis ; *bracteis* lanceolatis subserratis venosis hirtis.

*Leaves* nearly sessile, ovate ; *flowers* axillary, solitary, very shortly pedunculate ; *bracts* lanceolate, somewhat serrated, veined, hairy.

Hoitzia coccinea.—*Cav.*

——— Mexicana.—*Lam.*

Cantua Hoitzia.—*Willd.*

Descr.—*Shrubs* covered with a white glandular pubescence. *Stem* a little branched, round, silky, shining, from three to four feet high. *Leaves* alternate, ovate, lanceolate, nearly sessile, veined, hairy, sharply serrated, each serrature furnished with a point. *Bracts* lanceolate, nearly entire, white at the margin, green in the centre. *Calyx* whitish, covered with viscid hairs, divided into five parts, each part furnished with a green rib, and acute. *Flowers* solitary, disposed in a long paniculate raceme of from two to three feet long. *Corolla* funnel-shaped, about an inch long, of a pinkish red colour, having the interior of the tube much lighter ; the limb is divided into five roundish lobes. *Stamens* five, longer than the corolla, pinkish, and peculiarly twisted just below the anthers. *Anthers* brownish, versatile. *Style* longer than the stamens, and of the same colour, divided at the top into three parts. *Stigmas* three, covered with viscid hairs. *Ovarium* angular, pubescent, having at the base an appendage similar in form to a disc. *Seeds ?*

This is certainly a very splendid species when grown well and in full flower. The colour of the flowers is so peculiarly delicate and beautiful, that, notwithstanding our artist has taken every pains to obtain the right tint, he has not succeeded exactly to our satisfaction; nor do we conceive it possible to imitate the transparent and delicate hue of these flowers. This is a Mexican genus, of which five species are known. *H. coccinea* and *H. cærulea* inhabit mountains at a considerable elevation, but the habitat of the other three species is not stated. It appears to have been introduced in the year 1824; but we are not aware that it has been figured in any English botanical publication.

This genus has no known medicinal properties.

*Hoitzia coccinea* will succeed well either in a cool stove or warm greenhouse. The soil should be loam mixed with a little peat and sand. It is readily increased by cuttings of the young wood at any season of the year. This species is inclined to grow rather tall, it ought therefore to be frequently stopped, so as to make it bushy. This operation should be performed previous to November, for the purpose of allowing the plant to make good flower-spikes, which are produced in the winter and spring months.

Our drawing was taken from a finely-flowered specimen in the collection of Mrs. Willmore, of Strawberry Vale, near Birmingham, whose collection of fine healthy plants is deserving of notice.

The generic name is from *Hoitzit*, its name in Mexico; the specific name, *coccinea*, has reference to the scarlet colour of the flowers.

Fig. 1, corolla laid open, to show the insertion of the stamens; 2, style and germ invested by the calyx.

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# ODONTOGLOSSUM CORDATUM.

(*Cordate-lipped Odontoglossum.*)

LINNEAN SYSTEM.
GYNANDRIA MONANDRIA.

No. 100.

NATURAL ORDER.
ORCHIDACEÆ.

GENERIC CHARACTER.

Odontoglossum. (Humb. et Kunth.) *Perianthium* explanatum æquale; *sepalis petalisque* augustis acuminatis liberis. *Labellum* indivisum ecalcaratum unguiculatum unque eum basi columnæ continuo, laminâ patente basi cristatâ. *Columna* erecta membranaceo-marginata apice utrinque alata. *Anthera* bilocularis. *Pollinia* 2 solida caudiculâ lineari glandulâ hamatâ. *Herbæ epiphytæ* pseudobulbiferæ. *Folia* plicata. *Scapus* terminalis vaginatus. *Flores* speciosi. *Kunth.*

*Perianth* explanate, equal. *Sepals* and *Petals* narrow, acuminate, free. *Labellum* undivided, spurless, clawed, claw continuous with the base of the column, lamina spreading, crested at the base. *Column* erect, with a membranaceous margin, winged on each side at the apex. *Anther* two-celled. *Pollen-masses* 2, solid, caudicula linear, gland hooked. *Epiphytes* pseudobulbous. *Leaves* plicate. *Scape* terminal, sheathed. *Flowers* showy.

SPECIFIC CHARACTER.

O. Cordatum; *scapo* ascendente radicali; *sepalis* lineari lanceolatis acuminatis; *petalis* conformibus longioribus; *labello* cordato acuminato unguis lamellâ carnosâ *apice* bilobâ basi bicristata; *columnâ* pubescente clavatâ. *Lindl. Bot. Reg.* N. S. p. 50.

*Scape* ascending from the root; *sepals* linear, lanceolate, acuminate; *petals* of the same form, but longer; *labellum* cordate, acuminate, scale of the unguis fleshy; *apex* two-lobed, two-crested at the base; *column* pubescent, club-shaped.

Odontoglossum cordatum.—*Lindl.*

Descr.—*Pseudobulbs* ovate oblong, compressed, smooth, bearing at the apex one leaf. *Leaves* lanceolate, acute, soft and thin, scored with light transparent lines, their base sheathing the pseudobulbs on each side. *Scape* simple, somewhat flexuose, ascending, sheathed. *Raceme* lax. *Flowers* distant. *Pedicels* long. *Bracteas* acuminate, equal in length to the pedicels. *Sepals* and *petals* linear-lanceolate, exceedingly acuminate, undulate, of a greenish-yellow, marked with brown. *Lip* cordate, acuminate, white, the margin minutely spotted with brown,

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This elegant species of *Odontoglossum*, a native of Mexico, is in the collection of Geo. Barker, Esq., of Springfield, by whom it was imported, and from whose plant our drawing was made in the summer of last year.

This species should be kept in a hot and humid stove during the growing season, and have plenty of water. When dormant it ought to be placed in a cooler and dryer house. It should be potted in rough sandy peat, mixed with plenty of drainers, using a large portion of them near the bottom of the pot. Increased by division.

The generic name, *Odontoglossum*, is derived from οδους, a tooth, and γλωσσα, a tongue, alluding probably to the crest of the labellum. The specific name, *Cordatum*, refers to the heart-shaped form of the labellum.

1 2

# TRICHOPILIA TORTILIS.

(*Twisted Trichopilia.*)

LINNEAN SYSTEM.
GYNANDRIA.

No. 101.

NATURAL ORDER.
ORCHIDACEÆ.

GENERIC CHARACTER.

Trichopilia (Lindl.) *Sepala* et *petala* æqualia patentia angusta. *Labellum* magnum petaloideum convolutum cum columnâ parallelum trilobum, *lobo* intermedio subbilobo planiusculo intùs nudo. *Columna* teres clavata. *Clinandrium* cucullatum 3-lobum villoso-fimbriatum. *Anthera* 1-locularis compressa, *anticè* convexa. *Pollinia* 2 posticè suleata, *caudiculæ* tenui cuneatæ adherentia; glandulâ minimâ. *Pseudobulbi* carnosi vaginis maculatis supertecti monophylli coriacei. *Flores* solitarii axillares.—*Lindl. Introd. Nat. Syst. Bot.* 2nd. edit. p. 446.

*Sepals* and *petals* equal, patent, narrow. *Labellum* large, petaloid, convolute, parallel with the column, three-lobed, the intermediate *lobe* somewhat two-lobed, smoothish, inwardly naked. *Column* round, club-shaped. *Clinandrium* cucullate, three-lobed, villosely fringed. *Anther* one-celled, compressed, convex in front. *Pollen-masses* two, suleate behind, adhering to a weak *caudicula*, with a small gland. *Pseudobulbs* fleshy, covered with spotted sheaths, bearing one coriaceous leaf. *Flowers* solitary, axillary.

T. Tortilis. *Pseudobulbs* oblong, furrowed, sheathed, sheaths spotted with brown. *Leaves* thick, ovate-lanceolate. *Flowers* solitary, axillary. *Sepals* and *petals* patent, narrow, twisted, of a brownish red colour. *Labellum* convolute, obsolctely three-lobed, the central lobe divided, with two deep cavities in the middle; its colour is white, beautifully spotted with purple, more or less dark. *Column* parallel and continuous with the labellum, round and clavate. *Clinandrium* cucullate, obsoletely three-lobed, fimbriate. *Stigmatic cavity* egg-shaped. *Caudicula* slender, cuneate. *Gland* minute. *Pollen-masses* pear-shaped, suleate posteriorly. *Anther* one-celled, compressed, apiculate. *Ovarium* somewhat bowed, clavate, deeply furrowed on each side.

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This is a very beautiful Epiphyte; in structure it approaches near to the *Oncidium* group, in its labellum being continuous with the column, and more or less lobed; as well as in having the caudicula cuneate, and the gland minute. It differs, however, in the convolute state of the labellum, in the absence of wings on the column, in the fleshy crest on the labellum, and in the singular structure of the clinandrium, from which latter character it has received its name.

It is a native of Mexico, and was imported in the year 1835, by George Barker, Esq., of Springfield, from whose plant our drawing was taken.

In cultivation it requires a moist stove heat when growing, but should be drier when at rest. The best soil is good sandy peat, which should be broken into pieces of about the size of a walnut; and when potted the soil and the plant should be elevated in the middle above the rim of the pot.

The generic name is derived from θριξ, hair, and πιλος, a cap, in allusion to the hairy appearance of the clinandrium; the specific name, tortilis, has reference to the twisted state of the sepals and petals.

Fig. 1, column; 2, lateral view of the anther; 3, internal view of the same; 4, pollinia, caudicula, and minute gland.

## ON THE PROGRESS AND PRINCIPLES OF ORNAMENTAL GARDENING.

The art of ornamental gardening has been studied more or less among civilised nations, from the earliest periods of which we have any detailed records. The "hanging gardens" of the palaced terraces of Babylon,—the minutely-described pleasure-grounds of the villas of Pliny, so carefully recorded by their vain possessor,—the architectural melange of art and nature at Versailles,—and the landscape gardens of more recent date in England, give us very distant and distinct phases of the art, influenced by the peculiar character of the state of civilisation which called them respectively into existence; yet in each phase, however different in character, we may safely imagine equally beautiful results to have been produced; for, wherever in art a true principle governs a design, not only in its general conception but in the working out of all its minor and ornamental details, beautiful combinations must be evolved, and results agreeable to the reason and pleasing to the eye must be produced. Two principles totally opposite in character, followed out in any design of art with equal talent, would produce one common result—beauty. However opposite in effect, the result would be, in beauty, equal. They would please differently prejudiced or differently constituted minds in different degrees, but the abstract beauty would still be equal. For instance, to borrow an illustration from an art nearly related to the one under discussion, architecture,—the Grecian and Gothic styles (taking each in their purest period) may be said to be equally beautiful; the Grecian, following out its principle of a combination of horizontal lines, and the Gothic its reverse principle of a combination of perpendicular lines, have each arrived at beauty by opposite roads; and hence it would seem that what is called "taste," or criticism in art, should consist, not in preferring beauty under any particular form or influence, but in appreciating beauty in the abstract, let the forms under which it is presented, and the principles by which it is produced, be what they may. Without a governing principle, and that principle in harmonious accordance with time, place, and circumstance, true beauty cannot be produced in artistical combinations; and hence it appears also, not only that "taste," or criticism, consists in the equal appreciation of beauty produced by opposite principles, but that works of combination in art, produced without a governing principle, are devoid of taste, and beneath criticism.

It is common to hear persons, speaking from prejudice, or feelings which have at some time or other received their colouring from peculiar circumstances, speak of the "stiff and unmeaning" or "frightful" taste of the Dutch or French gardens of the last century; others equally decry the "stupid serpentine walks, rustic bridges," &c., of the more modern landscape garden:—each is equally

wrong, and is speaking from a mere instinct or impulse, and not from a reasoning process; the fact being that *either* of those opposite styles is capable of producing an equal degree of positive beauty.

It is my object here to note down briefly, but in order as regular as space will admit, a few of the general principles which ought to govern ornamental gardening under various circumstances, particularly such as are applicable to every-day practice, and which have been suggested to me at different periods in rambling through some of the most beautiful gardens of Europe.

We can know but little of the style of gardening that prevailed in the earlier ages of the world, but doubtless in every age of high civilisation men were found to apply true principles to every art, and beauty was produced in gardens as perfect as in other works of art (of which the monuments still remain to attest their magnificence) and beauty, perhaps of a novel and singular character, of which we can form no idea, unless better acquainted with the details of the civilisation which called up those combinations of earth and trees and flowers into their beautiful existence.

The earliest period at which we can form a tolerably correct idea of the style of gardens in use among the ancients, is that of the Roman empire, when the minute descriptions of Pliny and other writers leave little to the curious to desire; but in this case no extraordinary novelty rewards the research, for from these records it would appear, that a pleasure garden or villa, at Tusculum, among the hills that gird the Campagna, or plain, in the centre of which stands the "eternal city," was much the same thing in the days of Pliny as the villa of a Roman noble of the present day; and those who have wandered among those hills (the favourite site for the villas of the modern as well as ancient Romans), and compared the ruins of the gorgeous gardens of the artist * emperor Hadrian, with those of the neighbouring villas of Este, of the Borghese, or Chigi, created within the last two centuries, will acknowledge that the same principles of arrangement, the terraces, fountains, statues, temples, &c., pervade both.

A still stronger proof of the similarity of the gardening taste of ancient and modern Italy I noticed upon the painted walls of the houses of Pompeii (those singular memoirs of the lives and customs of the people of a Roman provincial town eighteen centuries ago), where there is a painting, still in perfect preservation, which might pass as well for the representation of a garden in the reign of the present Pope Gregory XVI. as in that of Augustus, which it accurately represents.

* The Emperor Hadrian spent many years in embellishing, from his own plans, his villa at Tivoli, with imitations of the most remarkable objects he had seen in his travels in Greece, Egypt, Syria, &c. &c. He had his vale of Tempe, his Egyptian tomb, and many of the most striking features of the then civilised world reduced to the scale of his celebrated villa. Several public buildings in Rome were also erected after his design; in short, the arts occupied as much of his time as the empire.

In searching for causes for this similarity, the most probable would seem to be, in the first place, that though the character of the civilisation of the two periods is different as far as political influences are concerned, yet that many other circumstances continued the same, and many, both of climate and social custom, continue their influence over agricultural and horticultural pursuits, in modern as they did in ancient Italy, and so still impart a similar character to the villa * or pleasure-garden.

Secondly, that neither ancient nor modern Italy advanced farther than those periods of civilisation, where art arrived progressively at perfection, abuse, and decline; and in neither had the degree of prosperity necessary to the stimulation of art continued long enough to reach that epoch when a necessary return to nature and first principles takes place, producing a new combination, where nature leads, embellished, but not encumbered by art; a combination more nearly attained in the best examples of landscape gardening in England than perhaps in any other ornamental gardens ever attempted. The style of ancient and modern Italy, that of terraces, fountains, and temples, which may be called architectural gardening, for even the trees were constrained by the shears to form straight lines or arcades, found its way from Italy to France, where it was carried to its highest pitch of perfection and abuse under Louis XIV. in the gardens of Versailles, for which the famous Boboli gardens of Florence served as the model. This taste soon afterwards began to be practised in England, but not upon a large scale until imported from the Continent by William the Third, from which circumstance it was erroneously called the Dutch style. It reigned supreme, however, for but a short time, when the increasing prosperity of the nation brought us to that period when certain impulses of art having passed through the phases of their highest perfection, abuse, and decline,—first principles and nature are again resorted to, by which, if the stimulation of prosperity continue, the most beautiful results are effected.

The first attempts at ornamental gardening must be deviations from nature—squaring, levelling, &c. &c.; in short, art applied in its simplest and most obvious forms—this impetus of deviation from nature once given, must go on increasing to a certain point, and, in a regular and progressive advance from the squaring and levelling of the first gardener, arrive eventually at a state similar to that of the Italian or French style, evolving in its progress many new elements of effect and beauty. Then comes the decline, and then, naturally, the return to the first simple principles, which had given the original impetus to the work: yet not with the paucity of means possessed by the first squarer and leveller, but with a mass of principles and rudiments which enables the newly-inspired artist to recommence the race at a point very far in advance of his original predecessor. The return to simpler and purer principles of beauty in this country was doubtless

* In Italy a villa does not mean so much the residence as the garden,—the Villa Reale at Naples, is a public garden or promenade, without any residence.

accelerated by the aspect of our beautiful parks—a feature peculiar to the scenery of England. As international civilisation and courtesy increased about the beginning of the last century, the spirit of travel grew stronger in our islanders; and though struck at first with the magnificence of the foreign residences, and their statue-peopled gardens, which they beheld in their travels, yet on their return, the beautiful repose of the natural slopes, and luxuriant uncropped foliage of their own finely-timbered parks, received a value from the means of strong comparison, which they had never possessed before; and this new appreciation of the peculiar beauties of our park scenery, with other collateral causes, led to the establishment of a new style, which has here been appropriately termed landscape gardening, but on the Continent, where the new style soon became known and admired, gardens laid out upon its principle were called, and are still called, in compliment to the country that originated them, English gardens (Jardins Anglais).—I find that I have already occupied so much more space than I intended, that my list of principles and remarks applicable to every-day practice, must form the subject of another paper, in which I will endeavour to show that no style ought to be discarded entirely, to make room for a newer fashion, but that the principles of any style, under proper modification, may be advantageously applied to present circumstances,—more particularly both the architectural and landscape style, which to residences of any extent are both necessary, each in its proper place, to that union of art and nature which is required as it were to *frame* a residence, and soften it into the scenery by which it is surrounded.

(*To be continued.*)

## SUGGESTIONS FOR THE TRANSMISSION OF SEEDS TO THIS COUNTRY, COLLECTED FOR THE MOST PART IN HOT CLIMATES.

BY DAVID CAMERON, A.L.S.

Every person who has been in the habit of receiving seeds from tropical climates, and more particularly those collected in the East Indies, must have observed how small a proportion of the more rare and valuable kinds vegetate, in consequence of their being so perforated by insects as to destroy their vegetating properties.

Various means have been tried to remedy this evil, but hitherto with little success. Some have tried sealing them up in bottles, or soldering them close in tin cases, but this appears nearly to destroy them, as they seldom vegetate. Others have recommended them to be wrapped up in very coarse brown paper, and this method seems to be beneficial in many instances, as it keeps out the insects, and prevents them from breeding among the seeds. Salt and water is also worthy of trial. Wheat that is grown near to the coast is frequently soaked in sea water previous to sowing, a plan which has been found beneficial; but how

long other seeds will retain their vegetating power after being immersed in salt and water, is, perhaps, not yet ascertained; and therefore immersion in sea water or salt water, afterwards drying them and wrapping them up in brown paper, so that it might be ascertained how they vegetate when they reach this country, is worthy of trial. It may be well to mention one circumstance in favour of this practice, which came under my own observation. Having received many years ago a rare assortment of seeds collected in the Mauritius, and intrusted to the care of a passenger; while on board they were so wetted by a storm, that the papers in which they were wrapped were destroyed, in consequence of which when they came to hand the seeds were all mixed together; but notwithstanding this, most of them when sown vegetated well, and amongst them several which had never before been made to vegetate.

## BOTANICAL NOTICES OF NEW PLANTS.

### DICOTYLEDONES.

#### CACTEÆ. Juss.

Epiphyllum Russellianum. Gard. Duke of Bedford's Epiphyllum. *Bot. Mag.* t. 3717. This beautiful species of Epiphyllum is very near to *E. truncatum*, from which it is, however, distinguished by the inner circle of the monadelphous stamens, which also vary in colour; those of the latter being white, whereas the former are pink.

It was found by Mr. Gardner, on the Organ Mountains, at an elevation of nearly six thousand feet, at which height it is alone to be found. *E. truncatum* he has never observed to grow at an elevation greater than four thousand five hundred. Its brilliant flowers are produced in May. *Bot. Mag.*

#### COMPOSITÆ. Juss.

Callichroa Platyglossa. Fisch. et Meyer. Golden Callichroa. *Bot. Mag.* t. 3719. This is a pretty annual, bearing yellow flowers, and having much the appearance of the genus *Okyura*, *Lathenia*, *etc.*, but from which it is sufficiently distinct.

It is a native of New California, and was raised from seeds sent by Dr. F. to the Glasgow Botanic Garden, at which establishment the plant was drawn.

#### EPACRIDEÆ.

Epacris impressa, B. parviflora. Lindl. Small-flowered pitted Epacris. *Bot. Reg.* 2 S. t. 19. This is a pretty variety, resembling *E. impressa*, but having smaller blossoms, and apparently, according to the plate, not of so brilliant a colour.

This plant was sent by Mr. James Backhouse to York, under the name *E. russifolia*, but which Dr. Lindley considers as nothing more than a variety of *E. impressa;* but whether *E. russifolia* of Brown be anything more than a variety he is uncertain.

Mr. Gunn, who has accurately observed the Botany of Van Diemen's Land, has lately sent over numerous wild specimens, which he considers only varieties of one species, varying in colour from a deep red, through all the paler shades of blush, to pure white; so that colour constitutes no distinction.

The natural season for the flowering of these plants is our winter, beginning to blossom in August and continuing till March. On this account they are particularly well suited for the ornamental greenhouse, as they produce an abundance of flowers during the winter. *Bot. Reg.*

SCROPHULARINEÆ.

Pentstemon barbatum, *var.* carneum. Lindl. Flesh-coloured bearded Pentstemon. *Bot. Reg.* 2 S. t. 21. This is a flesh-coloured variety of *P. barbatum*, and was raised from Mexican seeds, presented to the Horticultural Society by Fred. Dickson, Esq. It is a hardy perennial, growing from two to three feet high. It flowers from July to August, and suffers injury from excess of moisture during the winter.

Some uncertainty has existed as to what should constitute the distinction between *Chelone* and *Pentstemon*, whether it should consist of the hirsute anthers, the form of the corolla, or the winged appendage to the seeds. The latter distinction has, however, been fixed upon by Mr. Bentham, who has referred all species at present known to the genus *Pentstemon*, with the exception of *Chelone Lyonii, glabra, obliqua*, and *nemorosa*. *Bot. Reg.*

LABIATÆ.

Salvia patens. Cav. Large blue Mexican Sage. *Bot. Reg.* 2 S. t. 23. This is said to be the most beautiful species of this extensive genus, bearing very large deep azure-blue flowers. The first time this species was seen in this country, appears to be one exhibited at a meeting of the Truro Horticultural Meeting, Cornwall, 1838, by John Penberthy Magor, Esq., of Penverton, near Redruth. It is a native of Mexico, from whence roots of it, in a dried state, were forwarded to this country in the Spring of 1838, one of which shortly afterwards produced its magnificent flowers in Mr. Magor's garden, and has continued to do so in an airy greenhouse ever since. It is also in the extensive nursery collection of Messrs. Lowe and Co., Clapton. *Bot. Reg.*

ACANTHACEÆ.

Ruellia ciliatiflora. Hook. Fringe-flowered Ruellia. *Bot. Mag.* t. 3718. This is a handsome species, bearing lilac flowers, and was raised from seeds sent to the Glasgow Botanic Garden by Mr. Tweedie, from Buenos Ayres. It flowers in September. *Bot. Mag.*

THYMILEÆ.

Pimelea Hendersonii. Hook. Mr. Henderson's Pimelia. *Bot. Mag.* t. 3721. This is a pretty and delicate species, bearing pinkish blossoms, and is intermediate between *P. decussata* and *P. rosea*. It is a native of King George's Sound, and was raised by Messrs. Eagle and Henderson from seeds sent to them by Captain Cheyne, in May, 1837. The plant was about eighteen inches high, and covered with flowers. It is one of the most ornamental of the genus. *Bot. Mag.*

BEGONIACEÆ.

Begonia parvifolia. Schott. Small-leaved Begonia. *Bot. Mag.* t. 3720. This is a delicate species, bearing white flowers, which are produced in abundance. Its country is not mentioned, nor is its height; but a plant in the collection of the Birmingham Horticultural Society is from eighteen inches to two feet high. This plant was received at the Edinburgh Garden from the Berlin Garden, in the year 1836. It flowered profusely in the collection of Dr. Neill, at Cannon Mills, and at the Botanic Garden, throughout the summer.

ASCLEPIADACEÆ.

Hoya coriacea. Blume. Thick-leaved Hoya. *Bot. Reg.* 2 S. t. 18. This species was sent to Messrs. Loddiges from Manilla, and flowered, for the first time, in August, 1838. Its flowers are yellowish-white. This genus is Indian, and but imperfectly known to botanists. Dr. Wight mentions twenty, and Dr. Blume adds nine more.

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## MONOCOTYLEDONES.

ORCHIDEÆ. § EPIDENDREÆ.

Brassavola cuspidata. Hook. Spear-lipped Brassavola. *Bot. Mag.* t. 3722. This species is allied to *B. cucullata* and *B. angustata*. It is a native of Trinidad, and is in the collection of John Moss, Esq. of Otterspool, Liverpool, who received it from the above place, with about fifty other species. This species has also flowered in the collection of George Barker, Esq., Springfield, near Birmingham.

§ MALAXIDEÆ.

Dendrobium crumenatum. Lindl. Sweet club-stemmed Dendrobium. *Bot. Reg.* 2 S. t. 22. This is a handsome species, bearing yellow-whitish flowers. It is a native of the islands of the Indian archipelago, where it is found upon the branches of trees. Dr. Blume procured it in Java, near Batavia, and on the coast of the little island of Nusa Kambanga; and it was found by the late Sir Stamford Raffles in Sumatra. The specimen figured by Dr. Lindley is a native

of Ceylon, and in the collection of His Grace the Duke of Northumberland, at Sion-house, where it flowered in August, 1837. According to Dr. Blume, it varies with white and pink flowers, and with more or less oblong coriaceous leaves. It is easily cultivated.

Dendrobium aureum, *var.* pallidum. Golden-flowered Dendrobium, pale variety. *Bot. Reg.* 2 S. t. 20. This too is a pretty species, bearing white and orange-tinted flowers. It is also a native of Ceylon, where it was found by Mr. Macrae, growing upon trees near Nuera Ellia, flowering in January. It is not uncommon in collections. The drawing was made from a specimen in the collection of Messrs. Loddiges. It has a delicate scent, intermediate between violet and primrose. It is as easily propagated as *D. crumenatum*. *Bot. Reg.*

## CALENDAR OF GARDENING OPERATIONS FOR MAY.

The fires in the plant stoves may be discontinued if the weather prove mild about the middle of this month. The stove should have air early, as soon as the thermometer reaches about 75 degrees; and by shutting up early in the afternoon and sprinkling the floors, it will make a moist heat that ought to be sufficient to keep the house up to 60 degrees in the morning.

The time for planting out greenhouse and half-hardy plants into the open ground is from the middle to the latter end of the month, being somewhat earlier or later, according to the state of the weather. These and Dahlias ought to be gradually hardened before planting out, by being placed in frames or pits for a week or ten days previously, where the sashes can be drawn off during fine weather.

Transplant hardy and half-hardy annuals into their flowering stations, taking advantage of cloudy or showery weather for that purpose.

Ridge out Cucumbers for fruiting in the open ground.

Attend to shifting Balsams, Cockscombs, and other tender annuals. These ought to be finally got into their flowering pots by the middle of the month, that they may be ready to be put into the greenhouse when the plants are turned out of doors.

Rose trees, when attacked by the green fly, ought to be watered with a mixture of water and tobacco liquor in the evening.

Look over the peach trees upon the walls, and pick off all blistered leaves as they appear, and thin out the wood shoots so as to give strength to those wanted to make wood for the next year's crop.

Prepare beds of Neapolitan violets in a sheltered border of good soil. If made of a size for covering with frames, they will flower fine during the ensuing winter.

Miss Green del

# CYTISUS TRIFLORUS.

(*Three-flowered Cytisus.*)

LINNEAN SYSTEM.
MONADELPHIA DECANDRIA.

No. 102.

NATURAL ORDER.
LEGUMINOSÆ, TRIBE LOTEÆ.

GENERIC CHARACTER.

Cytisus. (Decand.) *Calyx* bilabiatus, labio superiore sæpius integro inferiore subtridentato. *Vexillum* ovatum amplum. *Carina* obtusissima genitalia includens. *Stamina* monadelpha. *Legumen* plano-compressum polyspermum eglandulosum. *Frutices* habitu genistarum trifoliolatarum. *Floribus* ferè omnium flavis. *Foliis* omnium 3 *foliolatis*. (*Decand. Prod.* vol. ii. p. 153.)

*Calyx* two lipped, upper lip oftentimes entire, lower lip somewhat three-toothed. *Standard* ovate, large. *Keel* very obtuse, concealing the sexual organs. *Stamens* joined in one set. *Legume* flatly compressed, many-seeded, glandless. *Shrubs* having the habit of the three-leaved broom. *Flowers* of almost all yellow. *Leaves* always in threes.

SPECIFIC CHARACTER.

C. triflorus; (*L'Her.*) Hirsutus; ramis teretibus, *foliis* petiolatis: *foliolis* obovato-ellipticis: *floribus* axillaribus pedicellatis ternis apice ramorum subracemosis.

Hirsute, branches round; *leaves* petiolate, *leaflets* obovate elliptical; *flowers* axillary pedicellate, in threes, somewhat racemose at the apex of the branches.

Cytisus triflorus.—*L'Her.* stirp. 184.—Desf. Fl. atl.—non Lam.

——— villosus.—*Pourr.*

Descr.—*Stem* about three feet high, branched, branches hairy. *Leaves* petiolate, arranged in threes. *Leaflets* obovate, pointed, covered with soft silky hairs. *Flowers* peduncular, yellow, arranged in threes, growing from the axils of the leaves, peduncles about a quarter of an inch long, covered with soft hairs. *Standard* ovate, large, yellow. *Wings* nearly as long as the keel, obtuse. *Keel*, very obtuse. *Stamens* united into one set. *Seed-vessel* compressed, indented in the centre, and covered with long soft hairs. *Seeds* about eight in each seed-vessel.

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This pretty free-flowering *Cytisus* is in the collection of the Birmingham Horticultural Society, and from a plant in the greenhouse of that establishment our drawing was made.

It is a half-hardy shrub, and a native of Spain; from which country it was introduced about the year 1640. It requires the shelter of a frame during the winter, or to be planted against a south wall, where some temporary protection may be had during severe weather. It flowers freely from April to May. It

may be increased by cuttings, and also by seeds, which appear to be produced in abundance. It may also be grafted on the *Cytisus Laburnum*, or any other showy species of the genus. The soil should be light. The wood of the *Tree-Cytisus*, or common Laburnum, is much valued by cabinet-makers, and is known among them by the name of French or Alpine ebony. The *Cytisus scoparius* is much sought after, from its beauty for veneering. It is also thought to be the flowering Cytisus mentioned by Virgil:

"Florentem cytisum sequitur lasciva capella."—Virg. Ecl. ii. l. 64.

Its young branches are frequently given as fodder, and are sometimes used instead of hops for brewing. The bark is also said to be useful for tanning leather; and the fibre capable of being manufactured into cloth.

The seeds of *Cytisus Laburnum* are poisonous, and serious consequences have occurred both in this country and in France, from children swallowing the flowers or seeds. The deleterious effects have been found, by Chevalier and Lassaigne, to reside in a proximate principle to which they have given the name *Cytisine;* and so powerful is it, that when small quantities are given to any animal, it invariably produces vomiting, and generally death.

The generic name *Cytisus*, is said to be derived from *Cythnus*, one of the Cyclades, where it was first found; and the specific name *triflorus*, from the flowers being arranged in three.

# ACACIA DEALBATA.

(*Whitened Acacia.*)

LINNEAN SYSTEM.
POLYGAMIA MONŒCIA.

No. 103.

NATURAL ORDER.
LEGUMINOSÆ, TRIBE MIMOSÆ.

GENERIC CHARACTER.

Acacia. (Neck.) *Flores* polygami. *Calyx* 4-5, dentatus. *Petala* 4-5, nunc libera nunc in corollam 4-5 fidam coalita. *Stamina* numero varia 10-200. *Legumen* continuum exsuccum bivalve. *Frutices* aut arbores, habitu et foliatione valdè variæ. *Spinæ* stipulares, sparsæ aut nullæ. *Flores* flavi, albi aut rariùs rubri, capitati aut spicati, decandri aut polyandri, cleutherandri aut monadelphi, petalis 4-5 liberis coalitisve constantes.—(*Decand. Prod.* vol. ii. p. 448.

*Flowers* polygamous. *Calyx* from 4 to 5 toothed. *Petals* 4 or 5, sometimes free, sometimes joined into a four or five divided corolla. *Stamens* varying from 10 to 200. *Legume* continuous, juiceless, and two-valved. *Shrubs* or trees both in habit and foliation very various. *Spines* either stipulary, scattered, or none. *Flowers* yellow, white, or rarely red, capitate or spiked, decandrous, or polyandrous, free or united, petals 4 or 5, free or joined.

SPECIFIC CHARACTER.

A. dealbata: inermis, *ramis* subangulatis petiolisque pube brevissimâ subvelutinis, *pinnis* 15-25 jugis; *foliolis* 30-35 jugis linearibus confertissimis pubescentibus, glandulâ ferè inter omnes pinnas; *capitulis* pedicellatis secus pedunculum axillarem racemosis.

Without prickles; *branches* somewhat angular, and together with the petioles covered with very short somewhat velvety hair; *pinnæ* from 15 to 25 pairs; *leaflets* from 30 to 35 pairs, linear, crowded together and pubescent, having a gland for the most part between the pinnæ; *heads* pedicellate or racemose.

Acacia dealbata.—*Link.* Enum. p. 445.

Descr.—*Stem* about twelve feet high, glaucous, smooth, and beautifully marked with large brown anastomosing veins, naked below, branched above. *Branches* about one foot long, covered with a delicate soft white velvety down. *Leaves* alternate, about four inches long, petiole and petiolulæ covered with the same velvety down as the branches, and having at the base a little fleshy enlargement. *Pinnæ* about twenty-five pairs, pubescent; at the base of each is an urceolate gland which secretes a sweet honey-like juice. *Leaflets* on the pinnæ about thirty pairs, linear, more or less obtuse. *Flowers* axillary and terminal, deposited in globular heads, peduncles and pedicels covered with the same velvety down as the petioles. *Bracts* thick, woolly, of various lengths. *Sepals* brownish at the margin, pubescent. *Petals* ovate, acute. *Stamens* numerous, smooth, articulated in a similar manner to those of the genus Tradescantia. *Anthers* roundish, two-celled. *Legume.* (?) *Seeds.* (?)

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This is unquestionably the most beautiful of all the Acacias which have yet come under our observation. Its panicle of inflorescence is about two feet long,

of a soft and delicate yellow, differing from that of any other species we know, and harmonising delightfully with the pale and elegant foliage. The sweet fluid which is secreted by the glands at the base of the pinnæ proves very attractive to insects. In the specimen now before us, we find an insect in almost every gland. We observe also that the leaf possesses the power of contracting upon the application of stimuli, although in a very much less degree than *Mimosa pudica*, or *Dionæa muscipula*. The minute and closely arranged leaflets, their glaucous, or rather whitened hue, together with the fine panicle of inflorescence, give this shrub a very striking appearance.

Our drawing was made from a magnificent specimen in the collection of Mrs. Willmore of Strawberry Vale, Edgbaston, near Birmingham.

Cultivation.—This is a greenhouse plant, and is well adapted for planting out in the border of a conservatory where it will have room, and if occasionally stopped at the top of the leading shoots so as to make it bushy, it will have a very handsome appearance. It flowers in spring. The soil most suitable for it is a mixture of loam, peat, and sand, either for pot culture, or for the border of the conservatory. It may be increased by cuttings planted in sand, and placed in a gentle bottom heat. The best plants are raised from seeds, which are ripened in tolerable abundance when planted out. Being one of the hardiest of the Acacias, it also does well planted against a south wall, where it can have a little protection during the severity of the winter. It may also be planted out in the open ground, as a standard, in the south of England, and in sheltered situations in Scotland upon the sea-coast, with every probability of success.

The genus *Acacia* contains about three hundred species, which are, for the most part, natives of New Holland.

From this genus is obtained the gum-arabic of commerce, which is procured from several species, but chiefly from *A. vera*, *A. arabica*, *A. Ehrenbergii*, *A. tortilis* and, perhaps, many others.

The bark of many of the species of Acacia is powerfully tonic and astringent; which latter property renders it valuable as an article in the process of tanning leather. In fact, the bark of some of the species contains tannin in such quantity that it has become an object of commercial speculation; and, according to the Edinburgh Philosophical Journal, in 1824 some tons of the extract of Acacia bark were imported into this country from New South Wales for the use of tanners. Since that time a preference has been given to the bark itself, of which large quantities are regularly shipped at Hobart Town for England. The rosewood of commerce is said to be the produce of a species of Mimosa found in the Brazilian forests.

The generic name is formed from ἀκάζω to sharpen, the specific name *dealbata* alludes to the whitened appearance of the leaves. The dissection shows a single floret with the germ and calyx.

Miss Thomas del

3 2 1

# PODALYRIA STYRACIFOLIA.

(*Styrax-leaved Podalyria.*)

LINNEAN SYSTEM.
DECANDRIA MONOGYNIA.

No. 104.

NATURAL ORDER.
LEGUMINOSÆ § PAPILIONACEÆ.

## GENERIC CHARACTER.

Podalyria (Lam). *Calyx* 5-fidus, *lobis* inæqualibus, basi intrusâ. *Corolla* vexillo majore, carinâ alis obtectâ. *Stamina* 10, persistentia basi subconnata. *Stigma* capitatum. *Legumen* sessile ventricosum polyspermum. *Frutices* capenses sæpius sericei. *Stipulæ* angustæ adpressæ. *Folia* simplicia alterna. *Pedunculi* axillares uni aut pauci-flori. *Bracteæ* caducæ. *Corollæ* purpureæ rosæ aut albæ.

*Calyx* 5-parted, *lobes* unequal, thrust in at the base. *Corolla* with a large standard, the keel covered by the wings. *Stamens* 10, persistent, somewhat joined at the base. *Stigma* capitate. *Legume* sessile, swelling, many-seeded. *Shrubs* natives of the Cape, most frequently covered with silky hairs. *Stipules* narrow, pressed to the stem. *Leaves* simple, alternate. *Peduncles* axillary, one or few-flowered. *Bracts* caducous. *Corolla* of a purple, rose, or white colour.

## SPECIFIC CHARACTER.

P. styracifolia: *foliis* ovalibus obovatisve mucronatis pubescentibus subtùs subreticulatis; *pedunculis* 1-2 floris folia æquantibus; *calycibus* ferrugineo-tomentosis; *lobis* acutis reflexis; *vexillis* reflexis latis emarginatis; *floribus* roseis.

*Leaves* oval, or obovate, mucronate, pubescent underneath, somewhat reticulately veined; *peduncles* one to two-flowered, equal in length to the leaf; *calyxes* covered with a kind of brownish tomentum; *lobes* acute, reflexed; *standard* reflexed, broad, notched at the end; *flowers* rose-coloured.

Podalyria styracifolia.—*Sims, Bot. Mag.* t. 1580; *Decandolle Prod.* vol. ii. p. 102.

Deser.—*Shrub; Stem* about four feet high, branched, covered all over with a soft silky pubescence. *Leaves* shortly petiolate, ovate, alternate, mucronate, beautifully reticulated when held to the light, and covered all over with a soft silky pubescence, similar to that on the stem. *Stipules* minute, subulate, silky. *Bracts* caducous. *Peduncles* about two inches long, the length of the leaf. *Calyx* unequally five-parted, brownish on the inside, covered with soft silky hairs on the outside. *Flowers* solitary, of a delicate and elegant rose colour. *Standard* large, reflexed, margin elegantly undulated, deeply notched in the centre, about an inch and a quarter in diameter, the base of which is whitish; *wings* longer than the keel, and concealing it; *apex* obtuse, waved at the margin, similar to the standard; *unguis* incurved. *Keel* small, enveloping the stamens and anthers, obtuse, having the apex and the claw more deeply tinted with pink. *Stamens* ten, persistent, somewhat joined at the base, situate on a fleshy torus and tightly

pressing the ovarium. *Anthers* adnate, roundish angular, two-celled, bursting inwardly, longitudinally. *Pollen* oblong, smooth. *Style* persistent, smooth. *Stigma* capitate, round, at the base of which is arranged a circle of soft silky hairs. *Ovarium* sessile, ventricose, densely covered with silky hairs, which, owing to the pressure of the stamens, have the appearance of being arranged in bands. *Seeds* numerous, reniform, attached to the dorsal suture.

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This is a very handsome plant bearing numerous delicate rose-coloured flowers near to the apex of the branch, and forming a conspicuous ornament in the greenhouse. The flowers are not always solitary as described by Decandolle in his sectional character; for on the plant from which our drawing was taken there were twin blossoms in several instances. But notwithstanding this deviation, it is evidently nothing more than *P. styracifolia*. It is a native of the Cape of Good Hope, and was introduced about the year 1792.

Cultivation.—This plant requires a greenhouse, and is of easy culture. It ought to be frequently stopped when in a young state, so as to cause it to become bushy.

The soil should be loam, peat, and sand. It may be increased by cuttings and by seeds.

This is exclusively an African genus, of which all the species hitherto known, (and which amount to about fourteen,) are inhabitants of the Cape of Good Hope. They are not remarkable for the possession of medicinal or any other important properties.

The generic name *Podalyria* is from Podalirius, a son of Æsculapius; the specific name *styracifolia* refers to the general appearance of the leaves, which very much resemble those of the plant which yields the gum storax.

Fig. 1, the stamens persistent, attached to the calyx; 2, shows the attachment of the seeds to the dorsal suture of the legume; 3, exterior view of the legume, showing the rows of silky hairs.

# BILLBERGIA IRIDIFOLIA.

(*Iris-leaved, or drooping Billbergia.*)

LINNEAN SYSTEM.
HEXANDRIA MONOGYNIA.

No. 105.

NATURAL ORDER.
BROMELIACEÆ.

GENERIC CHARACTER.

Billbergia. (Thunb.) *Calyx* superus, 3-partitus, unibracteatus. *Petala* 3, sepalis longiora, in tubo convoluta, basi squamis appendiculata. *Stamina* 6, libera, basibus sepalorum et petalorum inter squamas inserta. *Ovarium* 3-loculare polyspermum: *ovulis* minutissimis. *Stylus* filiformis. *Stigmata* 3, linearia, convoluta. *Capsula* baccata? *Semina* (ex Martio) nuda. Herbæ *epiphytæ* (Americæ æquinoctialis) *foliis* siccis lepidotis. *Flores* sessiles, nunc spicati nunc paniculati, cum rachi manifestè articulati. (*Lindley.*)

*Calyx* superior, 3-parted, with a single bractea. *Petals* 3, longer than the sepals, rolled up into a tube, and having scaly appendages at the base. *Stamens* 6, free, inserted between scales at the base of the sepals and petals. *Ovary* 3-celled, many-seeded: *ovules* very minute. *Style* thread-shaped. *Stigmas* 3, linear, convolute. *Capsule* berried? *Seeds* (according to Martius) naked. *Epiphytic* plants (of equinoctial America) with dry *leaves*, covered with leprous scales. *Flowers* sessile, sometimes spiked, sometimes panicled, manifestly articulated with the rachis.

SPECIFIC CHARACTER.

B. iridifolia; *foliis* lanceolato-ensiformibus undulatis acuminatis subspinosis; *spicâ* pendulâ multiflorâ; *floribus* solitariis; *bracteis* integerrimis coloratis florum longitudine.

*Leaves* lanceolate-ensiform, undulate, acuminate, somewhat spinous; *spike* pendulous, many-flowered; *flowers* solitary; *bracteas* very entire, coloured, the length of the flowers.

Billbergia iridifolia.—*Lindl. Bot. Reg.* vol. xiii.

Bromelia iridifolia.—*Nees et Martius.*

Descr.—*Leaves* from a foot to a foot and a half long, sheathing and spiny towards the base, the upper surface of a dark rich green, and covered beneath with white leprous scales. *Scape* spicate, terminal, red, pendulous, flexuose, clothed with deep red, inflated bracteas. *Flowers* distant, solitary, sessile, half invested by the rich, red, inflated bracteas. *Calyx* superior; divisions ovate-oblong, membranaceous, of a yellowish green, tipped with blue, scarcely half as long as the corolla. *Petals* linear, yellowish green, with a blue, obtuse, revolute apex; having at the base two fimbriated, nectariferous scales. *Anthers* versatile. *Ovary* inferior, smooth, 3-cornered, 3-celled.

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This plant, which is no less singular than beautiful in its appearance, was introduced to this country severaly ears ago, but is by no means common in

collections. It is a native of Rio Janeiro, where like other epiphytic plants it may be seen growing upon the trunks and branches of trees ; which, in tropical climates, are thus frequently adorned with hues and odours not their own.

The genus *Billbergia* was originally founded by Thunberg, and has been adopted by Dr. Lindley, as embracing some species formerly included in *Bromelia*, but which appear to differ from that genus in certain peculiarities of structure.

The natural order *Bromeliaceæ*, to which Billbergia belongs, contains altogether about twenty genera, one of which *Ananassa*, the Pine Apple, is remarkable for its well-known, rich, fleshy fruit. The plants of this order are very peculiar in habit ; many of the species have the power of existing without water and even without soil ; hence it is not unusual for the inhabitants of South America to suspend in their apartments such of the species as are remarkable either for the brilliancy of their colours, or the delicacy of their fragrance.

Cultivation.—*Billbergia iridifolia* is a *stove* perennial : it requires a strong heat to grow it fine, and should have a rather limited supply of water during the winter months. The soil should be loam, well-rotted dung, and sand, with plenty of drainers in the bottoms of the pots. It is readily increased by dividing, spring being the best season for that purpose. Although requiring a strong heat to ensure fine plants, it will almost live in a warm greenhouse.

# ON THE PROGRESS AND PRINCIPLES OF ORNAMENTAL GARDENING.

(*Continued from page* 44.)

On resuming my article on Ornamental Gardening commenced in the last number of the "Floral Cabinet," I have been led to investigate the cause of the very general love of flowers and taste for gardens which pervades all classes of our nation to so much greater an extent than in most neighbouring countries; and as a view of the subject has occurred to me which I think somewhat novel, I cannot help noting it down before I proceed regularly with my subject. In England all foreigners are particularly struck with the neat little gardens crowded with flowers that decorate alike the cottage of the peasant, of the village mechanic, or the larger villa or country box of the trader or merchant. In short, no residence however humble, where flowers will grow, is destitute of its little front flower-garden; and this at once proves the nationality of the taste, much more than the great gardens of the rich, which would form a luxurious appendage to every residence of importance, like a French cook or any other luxury, as a matter of course, whether the taste were national or not. In France, Italy, Spain, and Germany, may be seen sumptuous gardens attached to the royal palaces and the residences of the most wealthy nobles; but in none of these countries do we observe as a national feature flower-gardens attached to the houses of the peasantry or poorer classes—not in Italy, where the genial clime affords such facilities, where the splendid camellia will grow to the height of thirty feet unprotected in the open air, and the American aloe shoots up its towering spike of flowers spontaneously in the neglected thickets, is there a national taste for the cultivation of flowers; and all Italy did not contain a single nursery ground, I believe, until the French, among the numerous improvements effected during their occupation of the country, established one in the Farnesi gardens of the Palatine Hill, among the ruins of the palace of the Cæsars; not in Spain, where the feathery palm waves its beautiful foliage luxuriantly in the southern breeze, and beautiful flowers, that in our climate expand their delicate petals only under careful management and watchful care, gush into glorious bloom in early May upon the mountain side,—does there exist a national taste for their culture. Similar remarks may be made of Germany, France, or Switzerland. It may be argued, that where nature produces so many beautiful flowers spontaneously, there is no need for their culture; as in the southern countries, where the vegetable necessaries of life are produced in the greatest abundance and luxuriance, agriculture is the most neglected. But this comparison will not hold good, for we find the same thing occurring in the northern portions of

France, where the climate is not at all better than that of England, indeed in some respects worse, for the common laurel will not there stand the winter as it does with us: we must therefore find some other cause than the mere influence of climate, and I give the following hypothesis as a probable and, as far as I know, somewhat novel solution of the question. I cannot find that the love of flowers and gardening is innate with us; I find no very early traces of the passion which is now so general, and am induced to consider it not so much a part of the national character as a result of certain national habits and circumstances. I find it to have been a gradually increasing taste for three or four centuries, and find that its increase has been about in the same ratio as the increased consumption of coals for domestic and manufacturing purposes; from which fact I draw the following inferences, viz. that in the large towns the trees and other vegetation in the open places were gradually injured and disfigured, if not totally destroyed, by the sulphuric acid gas emitted in the combustion of coals in large and increasing quantities: an effect which was early observed; and even so far back as the reign of Henry II. an alarm lest it might prove as injurious to animal as vegetable life, led to the issuing of an edict by which the burning of coal in London, and I believe other large towns, was prohibited. The advantages however of coal fires were not thus to be extinguished by a royal mandate; the order was soon disregarded, and despite of that and other oppositions the consumption of coal went on increasing. The consequence eventually was, that all healthy vegetation within the limits of the thickly populated parts of large towns was prevented, as any one who has seen a luckless geranium or more wretched pot of mignonette struggling into, or rather out of, its miserable existence in any one of the narrow smoky streets of London or Birmingham, will easily admit; and very unpleasant would be the contemplation of such an object were it not for the strong conviction that an early release must soon put it out of its misery. From these circumstances we may trace the delight experienced by the cockney at the sight of green fields and waving trees, and his ecstacies at the bare idea of the existence of such places as Hampstead or Highgate; the next step was to obtain the means of possessing, if but in the smallest proportion, some of the objects rendered so desirable from being beheld but occasionally at perhaps long intervals. This was effected by renting a small patch of ground for a garden at a sufficient distance to ensure the success of vegetation; and at one period scarcely any inhabitant of a large town was without his garden in the suburbs. As luxury and wealth increased, a house was added to the garden, not for the sake of the house, for better were to be had within the town, but that the garden (a luxury impossible to be had in the coal-burning city) might be more constantly enjoyed. Thus originated with us as I imagine the national taste for gardening; and as all will acknowledge that the fashions of the towns govern those of the country, the suburban gardens of the great towns it may be supposed were soon copied around the cottages of the peasantry, and a taste so uncostly, and capable of yielding so

many pleasurable and innocent emotions each returning summer, is not likely when once fairly engrafted ever to be eradicated; and, at all events, as long as the same circumstances which originated the taste continue, will the flower-gardens of our villas and cottages continue the admiration of the European traveller.

This view is borne out by the circumstance that in other countries where coal is common, and I instance the neighbourhood of Liége, in Belgium, gardening taste is as prevalent as in England: the horticultural celebrity of the district of Liége is well known.

Having as clearly as I am able in so small a space noted down my hypothesis respecting the origin of our nationality as gardeners, I will proceed, as I proposed, to enumerate a few general maxims suggested to me by observation and experience which ought to govern the planning and execution of ornamental gardens; premising at the same time, that I do not pretend to lay down any complete or general system (for which purpose, studies for which I have no leisure would be necessary), but only a few ideas upon such points as have been suggested to me in my own limited sphere of observation.

First then, a cottage built in the rustic style, thatched, or the general effect of which is devoid of architectural pretensions—should be surrounded by a garden of the landscape character, modified in its plan by the extent of ground occupied—for to attempt rocks, lakes, cascades, and sometimes mountains, in a little back garden—

"Des cascades, et des montagnes, sur un arpent de terre,"

as De Lille* expresses it, produces a most vulgar effect; and yet in spite of De Lille's denunciation against crowding into a small space a number of paltry imitations of the grandest objects in nature, such is still the general conception in France of a "*jardin Anglais.*" Simon in his tour humorously describes an advertisement account of a residence in the suburbs of Paris, which is temptingly represented as possessing a "*jardin Anglais, avec ses roches, son pont rustique, et sa cascade.*"

These absurdities are above all things to be avoided; and in surrounding a rustic cottage, or one without any architectural pretensions, with an appropriate pleasure-garden, I would observe the following general principles:—A broad gravel walk should on two or three sides surround the building, following its own outline: on the other side, the lawn might slope directly up to the windows of the drawing-room or boudoir, opening to the ground; and in this part of the lawn, the flower-beds should be planned either in regular or irregular figures, according to the taste of the possessor; but on no account to be decorated with pedestals or vases, or anything of an architectural character. The walk to the

* De Lille's poem "*Les Jardins.*"

principal door should, if the ground be flat, be a direct line; or if otherwise, be guided only by the natural sinuosities of the ground. Nothing can be more utterly tasteless than serpentine walks upon a perfect flat, unless the turns are caused by a mass of shrubbery, a large tree, or some natural cause. If the building is approached by a carriage drive, the usual method is the best; in a small place near the road, such as I am describing, viz., a semicircle starting from the two entrance-gates, and passing the principal door. Any walks about the lawn or shrubbery, should be governed by the same principles I have described in speaking of an approach walk, and no unmeaning serpentines allowed. In a garden of such small dimensions as those generally attached to residences of the character of the one described, any urns or vases are inadmissible; but if the taste of the planner is strongly in favour of such things, he might, perhaps, introduce an object of that description at the end of the longest straight shrubbery walk, as a termination to the vista; but I must caution him against dotting them about indiscriminately, as productive of the worst possible effect. Rock-work is also to be avoided in most cases in gardens of this size, as producing a patchy and disagreeable effect, unless exceedingly well managed, which without space is almost impossible; but at any rate it must not be near or even in view of the house, as its rugged outline would be exceedingly discordant with the regular lines of the building. If introduced at all, it must be in the most secluded and distant part of the shrubbery; and after a few principles which ought to govern its construction, I shall refer the reader to my remarks upon the subject, when subsequently speaking of gardens of a more extended description. If there is a kitchen-garden, the ground of the pleasure-garden should be raised with a gradual slope in that direction, and the slope planted with ornamental but thick-growing shrubs. By this plan, not only would the vegetable ground be screened from view, but by planting the slope with low shrubs at the base, and gradually with those of a higher growth towards the top, each individual would distinctly exhibit its variety of foliage and inflorescence, instead of concealing each other; and the advantage of a variety of foliage would be obtained by this arrangement, which without it would require much more means and space. I do not give this plan as a novelty, for I have frequently seen it successfully executed, but mention it for the information of such as may not have observed its advantages.

I have little more to say respecting the planning of a garden attached to a cottage residence of no architectural pretension, and that little will, I think, be better said in my remarks upon the planning of gardens of larger dimensions, which I find must form the subject of another paper.

(*To be continued.*)

# BOTANICAL NOTICES OF NEW PLANTS.

## DICOTYLEDONES.

### CACTEÆ. Juss.

Echinocactus scopa. Broom Cactus. *Bot. Reg.* N. S. t. 24. This is a pretty species bearing bright yellow flowers, which are about an inch in diameter. It is a native of Brazil, from whence it has been sent to Prussia. It has received the name of the Broom Cactus, in consequence of having long stiff hairs, so as to resemble a broom.

It was figured from a plant in the collection of Thomas Harris, Esq., of Kingsbury.

Dr. Lindley suggests the propriety of separating the genus *Echinocactus* from *Cereus*, by their ribbed and round oblong stems, without regard to their flowers, considering that all the long flowered species may be placed in *Cereus*, and those with short flowers in *Echinocactus*, without regard to habit.

It seldom sends out shoots from its sides, and therefore it is difficult to propagate by cuttings; but where propagation is of more consequence than the specimen plant, it should be cut across, when the top part will form one plant, and the bottom will send out shoots from all sides of the cut. *Bot. Reg.*

### LABIATÆ.

Salvia confertiflora. Pohl. Close-flowered Sage. *Bot. Reg.* N. S. t. 29. This is a brilliant species bearing whorls of numerous compact flowers of an orange red colour, which are so bright and numerous, as to render the plant a conspicuous object during the autumn months, at which time it blossoms. The leaves have rather a disagreeable smell, similar to a mixture of the dead nettle and sorrel. It is a native of Brazil; and was found near Rio Janeiro, by Mr. Macrae, while in the service of the Horticultural Society; and in other parts of the empire by Sellow, and Pohl. It may be cultivated as a greenhouse plant, or be planted out of doors in a rich border during the summer months. It is however seen in its greatest beauty, when grown in a house intermediate between a greenhouse and stove; that is, where the temperature is never below fifty-five degrees. *Bot. Reg.*

### GESNERIACEÆ.

Gesneria Elongata, *var.* Elongated Gesneria, *var.* *Bot. Mag.* t. 3725. This species is not equal in beauty to many which we have in cultivation. It grows five feet high, and bears red orange flowers, which are about three quarters of an inch long, and are produced freely and in long succession. The plant was received at the Botanic Garden, Edinburgh, in September, 1836, from Messrs. Young, of the Epsom Nursery, under the name of *G. oblongata*. It is nearly allied to *G. mollis*, and may probably be the means of connecting together, as varieties, that species with the *G. elongata*.

URTICEÆ.

GALACTODENDRON UTILE. Humb. et Kunth. Cow Tree of the Caraccas. *Bot. Mag.* t. 3724. This extraordinary tree, although not remarkable for its flowers, which are supposed to be small and insignificant, is highly valuable to the Indians in its native country; to whom it affords an abundance of nourishing fluid, much resembling the milk of the cow.

Humboldt says: "Its leaves are oblong, pointed, coriaceous, and alternate, about ten inches long, and marked with lateral nerves, that are parallel, and project beneath. The flower we had no opportunity of seeing; the fruit is somewhat fleshy, and contains two kernels. Incisions made in the trunk of the tree, are followed by a profuse flow of gluey, and thickish milk, destitute of acridity, and exhaling a very agreeable balsamic odour. It was offered to us in calabashes, and though we drank large quantities of it both at night and in the morning, we experienced no uncomfortable effects. The viscidity of this fluid alone renders it rather unpleasant to those who are not accustomed to it. The negroes and free people soak their bread in it, and are stated to become visibly fatter at that season of the year that the tree yields the most milk."

When exposed to the air, this fluid becomes covered on the surface, probably from the absorption of oxygen, with membranes which are yellowish and thready, like those of cheese, but when separated from the fluid beneath, are nearly as elastic as caoutchouc, and exhibit the same tendency to putrefaction as gelatine. The people give the name of cheese to the curd which thus separates when brought into contact with the air, and say that a space of five or six days suffices to turn it sour, which appears to be correct.

Sir W. J. Hooker received a quantity of the milk from Sir Ralph Woodforde; some of which was presented to Dr. Thomson, Professor of Chemistry at the Glasgow University. He has discovered in it a new substance he calls galactine, which he has arranged among the solid oils.

"The milk," he says, "is white, opaque, and of the consistence of cream. It has a sour smell, owing to a small portion of free acetic acid, and reddens vegetable blues. Its specific gravity is 1.01242.

"It contains a peculiar substance which Bousingault and Mariano de Rivero considered as fibrous: but its characters appear to be similar to those of cork. When evaporated to dryness by a gentle heat, and the dry residue digested in alcohol, a substance is dissolved which constitutes by far the most abundant ingredient of the milk. When the alcoholic solution cools, it becomes white and opaque, and deposits an abundance of white flakes. These are galactine, which may be collected and dried on a filter."

This valuable tree is a native of the Cordillera of the shore, especially from Barbula to the lake of Maracaybo. According to Sir R. K. Porter's account, it grows at an elevation above the level of the sea, of about 4000 feet, and the

temperature, at eight o'clock under its spreading branches, was seventy degrees Fahrenheit.

The soil which these trees inhabit, is dark and rich, and must be damp all the year round. The trunk grows to sixty feet high, and upwards; and measures about twenty feet in circumference, about five feet from the root. The stem is *perfectly naked*, and is not interrupted by either leaf or branch. The leaves, when in a fresh state, are of a deep dark, and polished green, similar to those of the Laurel tribe, ten to sixteen inches long, and from two to three inches wide. *Bot. Mag.*

AMARANTHACEÆ. Lindl.

Trichinium alopecuroideum. Lindl. Foxtail Trichinium. *Bot. Reg.* N. S. 28. This is a half-hardy annual, bearing pinkish flowers, and although it does not appear by the plate to be of much beauty, is said to be sufficiently striking to deserve cultivation. The flowers are glossy, like those of a cockscomb. This genus is remarkable for the great quantity of delicate knotted hairs, with which the densely spiked or capitate flowers are covered. It was raised from seeds received from the Swan River, by R. Mangles, Esq., Sunning Hill. *Bot. Reg.*

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## MONOCOTYLEDONES.

ORCHIDEÆ. Lindl. EPIDENDREÆ.

Lælia furfuracea. Lindl. Scurfy-stalked Lælia. *Bot. Reg.* N. S. t. 26. This is a handsome species, bearing delicate rose-coloured flowers. It is allied to *L. autumnalis*, but differs in having the pseudo-bulbs ovate, and slightly furrowed, instead of having a long neck, and being deeply furrowed. The flowers have little or no smell; the petals are so much undulated, as to appear lobed, but they are distinctly rhomboidal; and, finally, the ovary is closely covered with black mealy glands.

It was imported by George Barker, Esq., from Mexico; from whom Dr. Lindley received it, in November, 1838. It has also been found by Count Karwinski, near Oaxaca, and is probably not uncommon in collections; large quantities having been received from Mexico by several persons, and especially by the Horticultural Society of London.

This species should be cultivated in a cooler house than is generally used for orchidaceous plants. *Bot. Reg.*

Lælia Autumnalis. Lindl. Autumnal Lælia. *Bot. Reg.* N. S. t. 27. This is a much more handsome species than the former. The flowers are much darker, and it also exhales a delightful perfume. A considerable number of plants have been distributed by order of the Council of the Horticultural Society of London, among the Fellows. The figure was taken from a specimen in the collection of the Duke of Bedford, at Woburn.

In the cultivation of this species in the Garden of the Horticultural Society of London, the treatment is extremely simple. When plants are received, they

are tied to a block of wood, and kept perfectly dry until they begin to send out roots, and manifest other signs of growth. They are then freely syringed two or three times a day, and this practice is continued until the growing season, when they are removed to a cooler house with a drier atmosphere. Here they are allowed to remain during the winter, and when the cold season is over, the above treatment is renewed. *Bot. Reg.*

VANDEÆ.

CIRRHÆA FUSCO-LUTEA. Lindl. Yellow Brown Cirrhæa. *Bot. Mag.* t. 3726. This is a delicate species, and as the name implies, bears a raceme of yellowish-brown flowers. It was imported by Messrs. Loddiges, who sent a plant to the Glasgow Botanic Garden, from which the drawing was taken. It flowers in June, and is a native of Brazil. *Bot. Mag.*

## CALENDAR OF GARDENING OPERATIONS FOR JUNE.

FINISH planting out Dahlias early in the month, securing them well with stakes; and if the weather prove dry, give them a copious supply of water in the evening. Likewise plant out Verbenas, Petunias, Pelargoniums, Lobelias, Salvias, and every other free-flowering greenhouse or half hardy plant to decorate the flower borders. These will become much more luxuriant and flower better than if planted in pots, and add much to the gaiety of the flower-garden both by their beauty and novelty.

Turn greenhouse plants into their summer station out of doors, and as they have done flowering, cut off all straggling branches so as to bring the plants into a good form. For the first week, if the weather be clear, they ought to be protected from the sun, and afterwards set as thin as possible, so that they may enjoy a free circulation of air.

Remove Balsams, and other tender annuals into the greenhouse as they come into flower, also some plants which may be in flower from the stove.

Many of the stove and greenhouse plants will require re-potting. This should be done when they are rather dry, for if the bulbs are wet the soil is apt afterwards to get sour.

Take up hardy bulbs as their leaves decay.

Attend to the watering of Alpine plants overhead two or three times a day in dry weather, so that they may frequently have their leaves wetted: and let the rose on the watering-pot be very fine.

Some early flowering Pinks will be ready for piping towards the end of the month. They are ready for that purpose as soon as the first flowers open so as to show that the varieties are correct.

Put in Pansy cuttings occasionally, and cut in those exhausted by flowering.

# VERONICA DIOSMÆFOLIA.

(*Diosma-leaved Speedwell.*)

LINNEAN SYSTEM.
DIANDRIA MONOGYNIA,

No. 106.

NATURAL ORDER.
SCROPHULARIACEÆ.

GENERIC CHARACTER.

Veronica. (Linn.) *Calyx* 4 raro 5 partitus, campanulatus vel compressus. *Corolla* tubo brevissimo, vel rarius elongato, limbo 4-partito, laciniis omnibus integerrimis patentibus planis supremo latiore. *Stamina* 2, ad latera laciniæ corolliuæ supremæ sita, divergentia, inferiorum vestigia nulla. *Antheræ* biloculares, loculis apice confluentibus. *Stigma* vix incrassatum. *Capsulæ* valvulæ medio septiferæ vel bipartibiles. *Semina* nuda.

*Herbæ*, suffrutices, fruticesve. *Folia* opposita, alterna vel verticillata. *Infloreseentia* axillaris, racemosa vel spicata. *Flores* sæpius cœruleæ vel albæ. *Bentl Scroph. Indie.*, p. 44.

*Calyx* 4 rarely 5 parted, bell-shaped, or compressed. *Corolla* with a very short tube, or rarely elongated, limb divided into four parts, all the divisions entire, spreading flat, having the upper division the broadest. *Stamens* 2, affixed to the side of the upper divisions of the corolla, diverging, no remains of the lower ones. *Anthers* 2-celled, cells confluent at the apex. *Stigma* hardly incrassate, valves of the capsule septiferous in the middle, or divided into two parts. *Seeds*, naked.

Herbaceous plants, or suffruticose, or shrubs. *Leaves* opposite, alternate, or whorled. *Infloreseenee*, axillary, racemose, or spiked. *Flowers* most frequently blue or white.

SPECIFIC CHARACTER.

V. diosmæfolia? *fruticosa*, caule ramosissimo, pubescente; *foliis* decussatis lanceolatis glabris margine recurvis; *floribus* racemosis lateralibus et terminalibus; *corolla* cœrulea; *calyee* ciliato.

*Shrub* very much branched, pubescent; *leaves* decussate, lanceolate, smooth, margin recurved; *flowers* racemose, lateral and terminal; *corolla* blue, calyx ciliate.

Veronica diosmæfolia?—*Cunn.*

Descr.—*Shrub; Stem* round, very much branched, growing about three feet high, clothed with a soft hairy pubescence. *Leaves* decussate, lanceolate, smooth, tapering into a short ciliate petiole. *Flowers* pedicellate, arranged in a raceme which is either lateral or terminal; pedicels about the length of the corolla, very finely pubescent. *Corolla* smooth, about four lines long, of a pleasing blue, (a frequent colour in the genus) varying in its tint, which is sometimes lighter, sometimes darker. *Calyx* 4-parted, about one-fourth the length of the corolla, pubescent. *Bracts* linear, ciliate, somewhat less than half the length of the peduncle. *Stamens* about half the length of the corolla. *Anthers* confluent. *Pollen* elliptical, in the centre of which is a longitudinal transparent line. *Style* about the length of the stamens and anthers, minutely pubescent; stigma capitate, hirsute. *Ovarium* ovate, compressed, divided into two parts. *Placenta* central, seeds numerous, reniform, papillose, sessile, verrucose.

This species is in the collection of the Birmingham Botanical and Horticultural Society, and was raised from seeds which were received from Van Diemen's Land, and presented to that establishment by J. W. Crompton, Esq., in 1835. It is a very neat and upright-growing shrub, and well adapted for growing against a south wall, being nearly hardy; as a specimen, planted out in the garden of the Society in an exposed situation, was not killed by the winter of 1837-8. The plants raised from the above seeds produced a few flowers in the spring of last year; in the April of the present year they were beautifully covered with blossoms, and are now perfecting their seeds.

The soil most congenial to its growth is a mixture of loam, peat and sand, in which compost it should be potted. It can be readily increased by cuttings from the young wood, which should be subjected to a little bottom heat. It may be safely protected by the cold frame during the winter.

The generic name is of doubtful origin. The specific name *diosmæfolia* alludes to the form of the leaves, which resemble those of a diosma.

# DIPLACUS PUNICEUS.

(*Crimson Diplacus.*)

LINNEAN SYSTEM.
DIDYNAMIA ANGIOSPERMIA,

No. 107.

NATURAL ORDER.
SCROPHULARIACEÆ.

GENERIC CHARACTER.

Diplacus. (Nutt.) *Calyx* prismaticus apice 5-fidus. *Corolla* ringens 5-fida, lobis subæqualibus plerumque emarginatis. *Stigma* bilamellatum. *Capsula* lineari-oblonga, bilocularis. *Placenta* (sive receptaculum seminis) lata, demum bipartita, adnata. *Semina* utrinque subulata. *Frutices* Californicæ, Mimulo proximæ. *Folia* opposita plerumque viscosa.—*Nutt.*

*Calyx* prismatic, divided into parts at the apex. *Corolla* gaping, divided into five parts, mostly unequal, emarginate. *Stigma* formed of two plates. *Capsule* linear, oblong, 2-celled. *Placenta*, or the receptacle with the seeds, broad, afterwards divided into 2 parts, adnate. *Seeds* on each side, subulate. *Shrubs* inhabitants of California, and near to the genus Mimulus. *Leaves* opposite, for the most part clammy.

SPECIFIC CHARACTER.

D. puniceus; *fruticosus* ramosissimus viscosus pubescens; *foliis* lineari-lanceolatis subconnatis serratis subacutis; *Calycis* laciniis inæqualibus acuminatis ciliatis; *corollis* puniceis lobis emarginatis.

*Shrub* much branched, viscid, pubescent; *leaves* linear, lanceolate, subconnate, serrated, somewhat acute, divisions of the calyx unequal, acuminate, ciliate; *corolla* crimson, *lobes* notched at the end.

Diplacus puniceus.—*Nutt.*

Descr. *Stem* shrubby, round, 3 feet or more high. *Leaves* opposite, narrow, lanceolate, very clammy, pubescent, serrated, somewhat connate at the base. *Flowers* solitary, axillary. *Corolla* about two inches long, of a beautiful bright crimson, but which soon fades: it is divided into five parts, which are somewhat unequal, each division is notched at the end. *Calyx* angled about half the length of the corolla, clammy, divided into five unequal parts, ciliate, the upper part the largest. *Stamens* 4, two long and two short, pubescent, acuminate, joined to, and included in, the throat of the corolla. *Anthers* 2-celled, dehiscing lengthwise, connective thickened at the base. *Pollen* smooth, circular, having a transparent point in the centre. *Style* longer than the corolla (exserted), pubescent. *Stigma* composed of two thin heart-shaped plates, the upper side of which is very hirsute. *Ovarium* narrow, oblong, smooth, two or many seeded. *Seeds* linear, oblong.

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This may be truly said to be an exceedingly handsome plant, producing its flowers freely, which are of a deep and brilliant crimson. It may be considered

as half hardy, and if planted into the open ground during the summer, will continue flowering in all probability until destroyed by the frost. It may be increased by cuttings of the young wood, which strike freely in sand when placed in a moderate bottom heat. The soil most suitable for its growth is a mixture of loam and peat. Our drawing was taken from a fine specimen in the collection of ——— Harris, Esq. of Kingsbury, whose skilful gardener, Mr. Beaton, is, we believe, the first who has succeeded in flowering it in this country. Mr. Beaton thinks it probable that beautiful hybrids might be raised between this species and *Diplacus glutinosus;* and that the deep scarlet tint of the former, mixed with the fine orange of the latter, might produce a variety superior to either.

The generic name is formed from δις *two*, and πλαχους *placenta*, in reference to the seed having two placentæ. *Puniceus* refers to the colour of the flowers.

# PETREA VOLUBILIS.

(*Twining Petrea.*)

LINNEAN SYSTEM.
DIDYNAMIA ANGIOSPERMIA.

No. 108.

NATURAL ORDER.
VERBENACEÆ.

GENERIC CHARACTER.

Petrea. (Linn.) *Calyx* campanulatus, coloratus; limbo duplici; exteriore quinquepartito, longo, patente, æquali, scarioso; interiore quinquedentato, brevissimo. *Corolla* calyce brevior; tubo brevi; limbo quinquefido, subæquali, patente. *Stamina* 4, inclusa. *Stigma* capitatum. *Capsula* (ex Jacq.) bilocularis, calyce persistente inclusa; loculis monospermis. *Arbores* aut frutices scandentes. *Folia* simplicia, opposita, integerrima. *Spicæ* axillares et terminales. *Flores* pedicellati, subopposite, bracteati. (*Kunth.*)

*Calyx* campanulate, coloured; limb double; the exterior 5-parted, long, spreading, equal scarious; the interior 5-toothed, very short. *Corolla* shorter than the calyx; tube short; limb 5-cleft, somewhat equal, spreading. *Stamens* 4, included. *Stigma* capitate. *Capsule* (according to Jacquin) 2-celled, enclosed by the persistent calyx; cells 1-seeded. *Trees* or climbing shrubs. *Leaves* simple, opposite, very entire. *Spikes* axillary and terminal. *Flowers* pedicellate, somewhat opposite, with bracts.

SPECIFIC CHARACTER.

P. volubilis; *foliis* ovato-oblongis acutis scabris; *spicis* pendulis racemosis.

*Leaves* ovate-oblong, acute, scabrous; *spikes* pendulous, racemose.

Petrea volubilis.—*Linn.* Hort. Cliff. 319.—Spec. Plant. 873.—Jacq. Americ. 180.

Descr.—*Shrub; Stem* climbing, acquiring considerable thickness and attaining a height of several feet. *Leaves* opposite with short footstalks, of a dark dull green, and scabrous to the touch. *Racemes* long, pendulous, opposite, many-flowered. *Calyx* star-like, longer than the corolla, of a greyish or lavender blue; corolla of a rich and most intense blue, with a small delicate white blotch at the base of the upper segment. *Stamens* didynamous, inclosed by the tube of the corolla.

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This splendid climber, although introduced to this country as early as 1733, and by no means unfrequent in collections, is not often seen in flower. It is a native of Vera Cruz. Our drawing was made from a magnificent specimen in the collection of —— Harris, Esq., of Kingsbury, where it has flowered profusely under the management of Mr. D. Beaton, the zealous and intelligent gardener, who has obligingly furnished us with some valuable remarks on its treatment.

This delightful climber, observes Mr. Beaton, ought to be refigured in our modern works, in order to bring such a floral treat more prominently before the

public. The plant ought to be spurred like a grape vine, in order to get spurs distributed all over the plant; the flowers being produced on spurs of the previous year's growth. I ought to remark, however, that the pruning of all ornamental plants, whether climbers or otherwise, must be guided, in a measure, by circumstances. The Petrea may be trained over a trellis, up a rafter, or round four or five sticks in a pot; or it may be formed into the shape of a standard rose, by disbudding the stem up to three or four feet, leaving two joints at the top, and stopping the leading shoots: these two joints being each furnished with two eyes, will throw out four shoots; these shoots ought to be allowed every indulgence the first season, and to be pruned back according to their strength the following season, just as they are beginning to grow. The formation of a regular round head being once obtained, the plant must be subjected to a more severe system of pruning; the leading shoots must be stopped at every second joint, in order to make them produce laterals all over the shoots: these lateral shoots are stopped at the third or fourth joints (or even shorter if they are not vigorous) and will then become flowering spurs.

When the plant is trained up a rafter, the leading shoot should not be stopped if the plant throws out laterals at every joint.

If good friable *loam* can be procured for this and most of the woody climbers, they will be found to grow and flower more freely in it than when mixed with one-third *peat*, the universal compost of writers, though given up long since by the best cultivators. If the loam is too stiff, or is apt to get hard in the pots, a little peat is absolutely necessary to keep it open; but in nine cases out of ten a layer of peat and loam on the top of the pot is quite sufficient. The Petrea grows freely from cuttings of the young or old wood, if placed in a brisk bottom heat under a hand-glass.

The generic name *Petrea* was given to this plant by Houston, its discoverer, in honour of Robert James Lord Petre, a great patron of botany, who died of small-pox, when a young man, about the year 1742. Peter Collinson, in a letter to Linnæus, published by the late Sir J. E. Smith, in the Linnean correspondence, speaks of the death of this young nobleman, as the greatest loss that botany or gardening ever felt in this island.

The specific name *volubilis* refers to its climbing habit.

# DENDROBIUM FIMBRIATUM.

(*Fringed Dendrobium.*)

LINNEAN SYSTEM.
GYNANDRIA MONANDRIA.

No. 109.

NATURAL ORDER.
ORCHIDACEÆ; TRIBE MALAXIDEÆ.
§ DENDROBIEÆ.

GENERIC CHARACTER.

Dendrobium. (Swartz.) *Sepala* membranacea, erecta vel patentia, lateralibus majoribus obliquis cum basi productâ columnæ connatis. *Petala* sepalo supremo sæpiùs majora, nunc minora, semper membranacea. *Labellum* cum pede columnæ articulatum vel connatum, semper sessile, indivisum vel trilobum, sæpius membranaceum, nunc appendiculatum. *Columna* semiteres, basi longè productâ. *Anthera* bilocularis. *Pollinia* 4, per paria collateralia. Herbæ *epiphytæ*, nunc caulescentes, nunc rhizomate repente pseudobulbifero. *Folia* plana, sæpiùs venosa. *Flores* solitarii, fasciculati vel racemosi, speciosi. (Lindley).

*Sepals* membranaceous, erect, or spreading, the lateral ones larger, oblique, and connate with the lengthened base of the column. *Petals* more frequently larger than the upper sepal, sometimes smaller, always membranaceous. *Lip* articulated or connate with the foot of the column, always sessile, undivided or 3-lobed, most commonly membranaceous, sometimes appendiculate. *Column* semiterete, with a lengthened base. *Anther* 2-celled. *Pollen-masses* 4, collateral, in pairs. *Epiphytic* plants, sometimes caulescent, sometimes with a creeping rhizoma bearing pseudo bulbs. *Leaves* plane, most commonly veined. *Flowers* solitary, fasciculated or racemose, handsome.

SPECIFIC CHARACTER.

D. fimbriatum; *caulibus* teretibus pendulis; *foliis* ovato-lanceolatis; *racemis* lateralibus multifloris; *sepalis* oblongis undulatis patentissimis; *petalis* majoribus undulatis ciliatis; *labello* indiviso cucullato rotundato fimbriato, fimbriis laceris. (Lindl.)

*Stems* terete, pendulous; *leaves* ovate-lanceolate; *racemes* lateral, many-flowered; *sepals* oblong, undulated, widely spreading; *petals* larger, undulated, ciliated; *lip* undivided, hooded, rounded, fringed, fringe torn.

Dendrobium fimbriatum.—Wall. MSS.—Hooker, Exot. Fl.—Lindley, Gen. et Sp. Orchid.

Descr.—*Stems* from two to three feet in length, pendulous; *leaves* striated, bifarious; *racemes* lateral, arising near the extremities of the branches; *sepals* and *petals* of a very dilute brownish buff, striated, exceedingly thin and membranaceous; *lip* convolute, with a broad, spreading limb, of an intense golden yellow.

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This elegant species of Dendrobium is a native of Nepal, in the East Indies, whence it was imported some years ago. Though well known to the cultivators of orchidaceous plants, we think it probable that many of our readers may not have seen the plant, and on that account we give it a place in the Floral Cabinet.

that its beauty and elegance may be more generally known. Our drawing was made from a fine specimen in the collection of George Barker, Esq., of Springfield, near Birmingham.

Cultivation.—It requires to be kept in a warm and humid stove while growing; but more cool and dry during the period of rest. It should be potted in rough peat and broken pots. It may be increased by dividing, like many others of this tribe.

The generic name, *Dendrobium*, is derived from δενδρον, *wood*, in allusion to the habit of the species of growing upon trees; and thus ornamenting, with their tortuous stems and beauteous flowers, the forests of India, where the greater portion of them are found. The specific name *fimbriatum* has reference to the fringed margin of the lip.

# ON THE PROGRESS AND PRINCIPLES OF ORNAMENTAL GARDENING.

(*Continued from page* 60.)

Before entering upon any of the details of Architectural Gardening, it will be more convenient to conclude my observations upon the Landscape style, which I shall do by treating of the application of that style to a place of much greater extent than the one supposed in my last article. But I shall still confine myself exclusively to Landscape by supposing the building, though of much increased dimensions, to be devoid of all architectural pretensions, of any description, being constructed in the simplest cottage style. I have selected such a building in order to avoid speaking of fountains, terraces, &c., &c., which would be equally inapplicable in this as the former instance, until I treat of another style of residence, to which they will form necessary adjuncts. We will imagine, then, a cottage residence of some extent, but rustic character, situated upon a gentle acclivity, full five hundred yards from the public road, and in the midst of a finely undulating country. For a building of this character, surrounded with grounds such as those about to be described, a like situation is of the greatest advantage. In the first place, the savannah-like effect, which is the great point to be attained, is nearly sure to result from such a disposition of ground, with very little assistance from art; in the second place, such inequalities afford natural causes for avoiding straight lines in the walks and approaches; and in the last place, such a country is generally intersected with numerous brooks and streams, which may, with great facility and small expense, be pent into rapids, conducted to abrupt falls, or spread out into a lake—advantages of the first importance in forming a landscape garden or small park.

Another natural advantage to be sought is, plenty of fine full-grown timber, for where new plantings alone are to furnish all the foliage effects, many years must elapse before the place arrives at a moderate degree of fullness and richness of effect, and full half a century or more before the fine effects of full-grown trees can be expected.

Without much gardening science, the advantages of fine timber were fully appreciated by the attendants of Catherine of Russia, who, previous to a projected visit of the Empress to a castle in the desert part of the country, caused full-grown trees to be carefully taken up, and carried a great distance, to be planted in the naked domain; so that the Empress, on her arrival, was much surprised to find a park and gardens, crowded with luxuriant foliage, where she had expected an empty waste. Whether the transplanting was permanently successful I have no means of knowing; but, at all events, it would be far too expensive an experiment for any but a royal exchequer, and therefore such advantages ought to be secured by selecting an already well-tempered piece of ground. I

would select a wood, clearing away my open spaces, and leaving my masses, clumps, and detached groups, or single trees. What magnificent garden-parks might be cut out of the American forests! Having well weighed the advantages of these natural aids in the selection of the ground, the next point to be considered is the application of art for its improvement; and the great point to be aimed at is, that a certain extent of cultivation, rather than artistical arrangement, should be the impression conveyed at first sight.

In the most distant plantations, none but forest trees should be admitted, and the greatest degree of wildness consistent with the health of the trees allowed in the undergrowth; here, too, a solitary poplar should be introduced now and then at a judiciously-selected point, and occasionally a group of three or five, which will greatly relieve by their upright and aspiring lines, the otherwise monotonously rounded masses of the general foliage. Looking over a landscape without poplars, produces in my mind a somewhat analogous effect to looking over a large town without steeples, where the prevailing horizontal lines of the house tops are unrelieved by any varying perpendiculars. But in attempting this effect, great care must be taken not to dot them about indiscriminately, as they would completely defeat the object in view; the points thus to be rendered salient and marked, must be as carefully selected as in an architectural elevation. I would avoid a regular belt of plantation, as is too usual, all round the grounds; for such a ring, unless of very great extent indeed, must produce a disagreeable effect when seen from any elevated spot which would allow the eye to embrace the whole circuit. I would have the exterior plantations in large masses, leaving openings sufficiently wide to connect the grounds with the surrounding country, which ought to be one of the fundamental principles of landscape gardening; and also be cautious not to let the interior distributions be so elaborate as to disconnect it with the adjacent scenery, for this would give the residence and its grounds the appearance of a patch in the country, an effect as disagreeable as that produced by a patch of an ill-matched colour in a garment. The effect to be given is not that of a spot of country different in character, but merely a spot more carefully cultivated, and where the prevailing characteristics of the surrounding landscape have been more concentrated, rendering it thus the most interesting point for the eye to rest upon. I would of all things avoid completely detaching a place from its surrounding landscape.

In the farthest part, too, of grounds not exceeding five or six hundred yards in a straight line, in any direction from the residence, the water should be managed; for a sheet of water should be at least five hundred yards distant from the house. In the present instance, I have supposed an available stream, which should be spread into a lake-like pool, at a point seen to advantage from the windows of the principal apartments. As its extent could not in reality be very great in the present instance, it must be made to appear large, by concealing the extremities, which is easily done by taking advantage of the inequalities of such

a piece of ground as I have selected, aided by a few judicious plantations. Care should be taken also to make the water at the lowest level, as it would produce an unreal and consequently disagreeable effect to see a sheet of water at a certain level, and a dry hollow still lower, unless some great natural barrier was present to account for it; which is only likely to occur in abrupt mountainous scenery.

Approaching nearer the residence the plantation ought gradually to assume a more regular character, and lower ornamental and evergreen shrubs should be introduced in those—round the lawns large showy flowers should be planted irregularly—the front of the shrubs, whose foliage would form a rich dark background to the bright colours, and prevent their forming gaudy and inharmonious patches. In the front I would have no nearer approach to flower gardening than this. At the back I would, at the distance of forty or fifty yards, have a sunk fence, surmounted by a low stone wall, about two feet high, upon which I would place large simple jars or vases, at long distances, which should contain trailing plants, to prevent a too neat and architectural effect. Between this fence and the house should be the flower-garden, arranged in any bold square plan the fancy may suggest, but all must here be angular, and no attempt at landscape or serpentine must be made.

(*To be continued.*)

## ON THE EXCRETIONS OF THE ROOTS OF PLANTS.

Perhaps there is no subject more interesting or more valuable to the agriculturist or horticulturist than this, inasmuch as upon a knowledge of this fact depends the judicious arrangement of a rotation of crops: and perhaps few subjects are really less understood. It is well known to agriculturists, that they cannot grow wheat or any other vegetable successively on the same ground, notwithstanding the soil may be annually well manured; it therefore cannot be considered to arise from an impoverished state of the soil. But the cause is now known to originate in a peculiar excretion of the root, which varies in different vegetables. This peculiar excretion was first discovered by Brugmans, who placed a plant of *Viola arvensis* in a clean transparent vessel. On examination he found that it had during the night dropped very small particles at the extremity of the roots. Since that time he has often found small grumous matter at the extremities of the roots of many species of *Euphorbia*, and *Cichorium*, as also of *Scabiosa arvensis*, *Inula helenium*, &c.; and as these grumous particles appeared to him not to be the result of accident, he considered them to be excretions of the root.

In 1805, Decandolle called the attention of botanists to this subject, and frequently solicited many chemists to investigate the properties of this matter. In 1831, Mr. Macaire, a distinguished chemist at Geneva, and friend of Decan-

dolle, undertook to investigate chemically the nature of these excretions, the particulars of which have been published in the Transactions of the Physical and Natural History Society at Geneva. On the commencement of his experiments, he obtained no result either by examining the roots taken from the soil, or by the analysis of the pure silica in which the plants had grown; but he found very curious facts on the removal of plants by washing the roots of different species clean of all foreign matter, and placing the plants in clean pure water for some hours. A plant of *Chondrilla muralis*, which had been placed in pure water for about eight hours, excreted a small quantity of matter analogous to opium, which was bitter and greenish; this substance, dissolved in water, gave a precipitate in brown flakes by the action of subacetate of lead, and acetate of lead. This matter, mixed with a solution of gelatine and submitted to a gentle heat, left a residue of a reddish-brown colour.

A similar result has been observed in the kidney-bean. He took two plants of the kidney-bean, and after well washing the roots, he placed one in a bottle of water to stand during the day, the other he placed in a bottle of water to stand during the night. On examining the bottles, there were evident signs of the presence of excretory matter, but the plant which stood during the night contained the larger quantity. The same thing occurred when the plants were placed in the dark. These facts confirm the observations of Brugmans before-mentioned. Mr. Macaire further observed that different plants excreted different matter;—that which he obtained from the *Leguminosæ* was analogous to gum, and contained a little carbonate of lime. He found that grasses deposit a small quantity of matter which contains muriated and carbonated alkalies, and earth, but very little gum: that the *succories* exude by their roots an abundance of matter, which is brown, bitter, and analogous to opium, and which also contains tannin, a brown, gummy, extractive substance, and some salts: that *poppies* appear to exude a similar matter to the preceding, and the *Euphorbias* a gum-resinous matter, of a whitish yellow colour, and very acrid.

These excretions are evidently designed for the purpose of freeing the plant from matter which is not congenial to it, and which must be injurious to its health. Mr. Macaire has moreover ascertained, by experiments, that plants may, by this process, discharge a portion of such noxious substances as they may have absorbed.

He placed a plant of *Mercurialis annua,* (after having well washed the roots,) in such a manner that one portion rested in a solution of acetate of lead, the other in pure water. The water he found, at the end of some days, to contain a quantity of acetate of lead, sensible to tests, and which, he considers, proves that it was absorbed by the root in the acetate of lead, and being rejected by the plant, was discharged into the pure water. According to the same observer, different plants which were placed for some days in a mixture of water, chalk, or acetate of lead, or nitrate of silver, or marine salt in small quantities, were

afterwards carefully washed, and then placed in pure water, in which their roots excreted the disagreeable matter with which they were gorged.

The effects of these excretions on vegetation have been investigated by vegetable physiologists, who have found that if the *Lythrum salicaria* be planted near the willow, the truffle near the oak or the hornbeam, they become unhealthy and die, in consequence of the excretion from the roots being noxious to them.

These observations have been confirmed by Macaire in the following manner:—He placed kidney-beans in water in which was mixed some excretions from the roots of other plants of the same species. On examining them he found that, instead of affording the plants nourishment, they became languid and died. He placed other *Leguminosæ* in the same solution mixed with the same excrements, and they were observed to flourish luxuriantly.

These facts sufficiently prove that the sowing of grain, &c., repeatedly on the same soil where it becomes languid and unhealthy, does not arise from poverty of the soil, but from excrementitious particles exuded by the root.

## BOTANICAL NOTICES OF NEW PLANTS.

### DICOTYLEDONES.

#### RANUNCULACEÆ.

Pæonia Brownii. Douglas's Californian Pæony. *Bot. Reg.* N. S. 30. This is an extremely rare and curious plant, introduced several years ago by the London Horticultural Society, to which establishment it was sent by Mr. Douglas. The petals are of a brownish red colour, according to the plate of the *Bot. Reg.*, but reddish purple according to Nuttall, and the sepals a brownish green. Its carpels are five in number. The diameter of the flower is about two inches. It is not showy, but is deserving of cultivation, from its singular and curious appearance. It was considered, until this species was discovered, that the genus Pæonia was exclusively Asiatic or European, but this species found in the new world has extended its limits.

It was found by Douglas, near the limits of perpetual snow, on the subalpine range of Mount Hood, in North West America; and according to Zoorey and Gray, Mr. Nuttall found it east of the Blue Mountains of Oregan, not in a subalpine situation.

It is hardy, with tuberous roots similar to those of the common Pæony, but much smaller. It grows little more than a foot high, and flowers in May. It may be increased either by seeds or by division of the root.

#### GERANIACEÆ.

Geranium cristatum, Stev. Crest-seeded Geranium. *Bot. Mag.* t. 3732. This is a very pretty prostrate species of geranium, growing in the Glasgow Botanic Garden, where it was received from St. Petersburgh. It is a native of Wakari,

and Jucharibusch, in Iberian Albania, where it was discovered by Steven; and since that time it has been found by Dr. Charles Ant. Meyer, in the province of Talusch, inhabiting the borders of the Caspian Sea, growing in mountainous districts, at an elevation equal to 3,600 feet above the level of the sea. Its flowers, which are purple, are produced freely in the month of July. This species is also in the collection of the Birmingham Botanical and Horticultural Society, where it has been raised from seeds received from Dr. Fischer of St. Petersburgh. It is perennial, and flowered very freely last year, in that establishment.

LEGUMINOSÆ AND PAPILIONACEÆ.

Lupinus Hartwegii. Lindl. Mr. Hartweg's Lupine. *Bot. Reg.* N. S. t. 31. This is certainly a very beautiful and showy species, related to L. plumosus; but from which it differs in its brilliant blue flowers, its annual duration, its obtuse green leaves, and much longer hairs. It is a native of Mexico, and was found growing in corn-fields. It grows two or three feet in height, and flowers freely in May and June. The Birmingham Botanical and Horticultural Society are indebted to Mr. Barker for seeds of this species, from which plants were raised which gaily decorate many parts of that establishment. Indeed it is a charming species, and will be found, by those who are fond of lupines, a valuable addition to this favourite genus.

PHILADELPHACEÆ.

Philadelphus Gordonianus. Lindl. Gordon's Philadelphus. *Bot. Reg.* N. S. t. 32. This is a hardy shrub, growing from eight to ten feet high, and its slender side-shoots present a weeping appearance. It was found by Mr. Douglas on the banks of the Columbia River, in which situation it forms underwood. It was raised many years ago by the Horticultural Society, and by them has been extensively circulated.

The flowers are large and pure white, and nearly scentless; they are arranged in close bunches of from five to nine, and are produced in such abundance, that it may be considered as one of the handsomest of our hardy shrubs. It may be readily known from its congeners, by its deeply serrated leaves, nearly superior fruit, its broad spreading calyx, and by the compact manner in which its flowers are arranged. It is suitable for any soil, and may be increased by seeds, or by cuttings of the half-ripened shoots about August. *Bot. Reg.*

BEGONIACEÆ.

Begonia Sinuata. Grah. Sinuated Begonia. *Bot. Mag.* t. 3731. This is a species with white delicate flowers. It is in the collection of the Edinburgh Botanic Garden, to which establishment it was sent by Dr. Neill, in 1836.

This species is also in the collection of the Birmingham Botanical and Horticultural Society, having been received from Mr. Otto, of the Berlin Botanic Garden. It is, however, by no means equal in beauty to many in cultivation.

EPACRIDEÆ.

Lissanthe stellata. Star-flowered Lissanthe. (*sp. nov.*) Caule minutè pubescenti; foliis sparsis oblongis breviter petiolatis glaucis mucronatis; floribus albis axillaribus solitariis breviter pedunculatis unibracteatis, limbo 5-partito apice fusco.

Descr. Shrub. Stem about 18 inches high, of a rigid habit, of a bright brown colour, and minutely clothed with soft downy hairs. Leaves scattered, shortly petiolate, oblong lanceolate, and covered with a glaucous hue, beautifully striated on the under surface, and mucronate, the mucro and the upper margin of the young leaves are of a bright brown colour, resembling the colour of the stem, but in the older leaves this becomes less conspicuous, and it assumes a more dull appearance. Bract, one ovate of a bright brown colour, and very deciduous, falling off before the limb of the corolla is expanded. Calyx 5-parted, greenish at the base, minutely ciliate, and arranged at the base in an imbricate manner. Corolla pedicellate, whitish, about four lines long; limb divided into 5 parts, which are extended and a little reflexed, and having each division at the end tipped with brown, which, from its arrangement, colour, and centre, with the stamens, give it a starry appearance: in the throat also, between the anthers, are arranged tufts of hairs, which are deflexed, and about the length of the anthers. Anthers five, sessile, brown, dehiscing longitudinally. Pollen smooth, spherical, or angular, having in the centre pellucid dots. Style smooth, shorter than the tube of the corolla. Stigma entire, tipped with brown. Ovarium covered with a mealy down, its form, when in a young state, oval, and divided into five cells: disc cup-shaped, obscurely divided into five parts.

The genus *Lissanthe* and *Leucopogon* come so near to each other according to Dr. Brown's generic character given in his Prodromus Floræ Novæ Hollandiæ, that it is doubtful in our opinion whether they should be kept distinct as genera. The distinction we can observe, is, that in *Leucopogon* the leaves are not striated, and the divisions of the limb are bearded lengthwise, for the limb of the corolla in both *Lissanthe* and *Leucopogon* is patent, as may be seen in the *Leucopogon Juniperina* and *Lissanthe Daphnoides*, although this fact is not noticed by Dr. Brown in the genus *Lissanthe*, but only in *Leucopogon*. The only difference therefore which we can perceive between *Lissanthe* and *Leucopogon* is, that *Lissanthe* has striated leaves, and that in the throat of the corolla between the anthers are found hairy appendages which are deflexed; the other parts of the character, in our opinion, will suit either genus.

This species, like those of both genera, is more singular and neat than handsome; the flowers are of a white colour, and of a tough nature, and when removed from the stem, in the course of a very short period, become withered and brown, similar in colour to the stem. It is in the collection of the Birmingham Horticultural Society, and was raised from seeds which were collected in New Holland, and presented to that establishment in the year 1836.

### MONOCOTYLEDONES.

#### MELANTHACEÆ.

Asagræa Officinalis. Lindl. Spike-flowered Asagræa. *Bot. Reg.* S. t. 33. This is a pretty plant, bearing a spike of small white flowers about six inches long.

It is bulbous and half hardy, and was sent to the London Horticultural Society from Mexico by their collector in that country. It grows in the neighbourhood of Vera Cruz, where it has received the name of Sabadilla. *Bot. Reg.*

#### LILIACEÆ.

Bessera Elegans. Lindl. Elegant Bessera. *Bot. Reg.* N. S. t. 34. This is a charming, indeed a beautiful plant, bearing an umbel of about twelve pendulous orange-red flowers, and having the anthers green. It is a native of Mexico, and was found by Karwinsky at Saltepee; but it was first sent to this country by her Majesty's Consul, John Parkinson, Esq. The plant from which the drawing was taken for the Botanical Register, is in the collection of John Rogers, Esq., jun., of Sevenoaks. This, and another species, are all that are at present known of the genus.

As yet little is known of its habits or cultivation. *Bot. Reg.*

## CALENDAR OF GARDENING OPERATIONS FOR JULY.

A few of the more delicate free-flowering sorts of greenhouse plants that would not bear the cold of last month may now be planted out into the borders in the beginning of this month; and even some may be brought from the stove. They will grow rapidly, and if the selection is judiciously made of free-flowering kinds, most of them will flower much finer than in pots. Secure those turned out last month with stakes, where they require that support.

Secure Dahlias well to their stakes from time to time.

Make a general shifting of the stove and greenhouse plants, and cut them into form as they have done flowering.

Strike Pinks by pipings, and towards the end of the month layer Carnations.

Sow biennials for flowering next season.

Plant fresh beds of Pansies; cut in those that have done flowering, and also put in cuttings to keep up a succession of young plants.

Look over the more rare kinds of herbaceous plants, either dividing or putting in cuttings of those which are in danger of being lost from getting too old and worn out, and which could not be divided in Spring.

Many of the more rare Alpine plants may also be divided and re-potted after they have done flowering.

Annuals may still be sown for flowering late in the Autumn.

It is now a good time for laying the young wood of Clematises and other plants that root best from the young wood.

# LATHYRUS ARMITAGEANUS.

(*Mr. Armitage's Lathyrus.*)

LINNEAN SYSTEM.
DIADELPHIA DECANDRIA.

No. 110.

NATURAL ORDER.
LEGUMINOSÆ.

## GENERIC CHARACTER.

Lathyrus. (Linn.) *Calyx* campanulatus, 5-fidus, lobis 2-superioribus brevioribus. *Corolla* papilionacea. *Stamina* diadelphous. *Stylus* complanatus apice dilatus, anticè villosus aut pubescens. *Legumen* oblongum polyspermum bivalve, 1-loculum. *Semina* globosa aut angulata. *Herbæ* sæpius scandentes. *Stipulæ* semisagittæ. *Petioli* apice in cirrhum ramosum abeuntes. *Foliola* 1-3 juga. *Pedunculi* axillares.—(*Decand. Prod.* vol. ii. p. 369.)

*Calyx* bell-shaped, 5-lobed, having the 2 upper lobes shorter than the rest. *Corolla* papilionaceous. *Stamens* in two sets, 9 and 1. *Style* flattened, dilated at the apex, and either villous or pubescent in front. *Legume* oblong, many-seeded, two-valved, one-celled. *Seeds* round, or angular. *Herbs* mostly climbing. *Stipules* half arrow-shaped. *Petiole* passing into a tendril branched at the apex. *Leaflets* from 1 to 3. *Peduncles* axillary.

## SPECIFIC CHARACTER.

L. Armitagcanus. *Suffruticosus*, ramosus, glaucus; *foliis* unijugis, foliolis ovatis sessilibus mucronatis venosis marginibus cartilagineis; *stipulis* sagittiformibus venosis foliolis æqualibus vel latioribus; *floribus* pedunculatis racemosis cæruleis; *pedunculis* foliis coæqualibus; *cirrhis* foliis longioribus ramosis.

*Suffruticose*, branched, glaucous; *leaves* one pair; *leaflets* ovate, sessile, mucronate, veined, margins cartilaginous; *stipules* arrow-shaped, veined equal or broader than the leaflets; *flowers* pedunculate, racemose, blue; *peduncles* equal in length to the leaves; *tendrils* longer than the leaves, branched.

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This is certainly a very beautiful and distinct species of *Lathyrus*. It was raised by the Birmingham Botanical and Horticultural Society in 1834, from cuttings which were presented to that establishment by the late Charles Cope, Esq., who received them from the Brazils, of which country it is a native. We have named it after the late Treasurer of the Birmingham Botanical and Horticultural Society, Mr. Armitage, whose well-known devotion to the study of Botany entitles his memory to this respect. To the exertions of this gentleman, together with the late Dr. Darwall, and a few other individuals, the Birmingham Botanical and Horticultural Society may be said to have owed its origin.

The following remarks on the treatment of this species are from the pen of the skilful and intelligent Curator of the Birmingham Botanical and Horticultural Society, Mr. D. Cameron:—"After several years' experience this proves only to be a half-hardy shrub, at least in exposed situations, as it has only survived some mild winters against a wall. It will thrive in any loamy soil; but when cultivated in pots it requires to have plenty of room. It flowers in May, and sometimes ripens seeds: it is readily increased by cuttings. The same plant has been raised from seeds obtained from other parts of South America."

For the etymology of Lathyrus, see vol. ii. p. 178.

Fig. 1, Calyx; 2, stamens; 3, germ.

4 2 3

# ONOSMA SETOSUM.

(*Bristly Onosma.*)

LINNEAN SYSTEM.
PENTANDRIA MONOGYNIA.

No. 111.

NATURAL ORDER.
BORAGINACEÆ.

GENERIC CHARACTER.

Onosma. (Linn.) Achenia 4 distincta, lapidea, basi imperforata. *Calyx* 5 partitus. *Corolla* tubulosa, clavata, fauce pervia. *Antheræ* sagittatæ, basi lobis nexæ.

*Achenia* 4, distinct, of a hard stony nature, imperforated at the base. *Calyx* divided into 5 parts. *Corolla* tubular, clavate, throat not closed. *Anthers* arrow-shaped, having the lobes at the base joined.

SPECIFIC CHARACTER.

O. setosum; tuberculato-hispidum; *setis* patentissimis; *caule* ramosa; *foliis* lincari-lanceolatis ad costam hispidis; *floribus* luteis sub-glabris; *stylis* exsertis; *acheniis* reticulato-rugosis.

Tubercular-hispid; *bristles* spreading; *stem* branched; *leaves* linear-lanceolate, hispid on the mid-rib; *flowers* yellow, somewhat smooth; *style* projecting; *seeds* reticulately rough.

Onosma setosum.—*Led. i. e. Flor. Alt.* t. 196. Page 27, in the same volume.—*Flor. altaica*, vol. i. p. 181.

Descr.—*Stem* about a foot high, round, branched, covered over with strongish hairs. *Leaves* sessile, linear-lanceolate, acute, scattered. *Flowers* yellow, numerous, arranged in a circinate manner before flowering, somewhat smooth. *Calyx* divided into five parts, each part alternate with the teeth of the corolla; *lobes* linear-acute. *Corolla* gamopetalous, five-toothed, teeth obtuse, reflexed at the apex, one fourth as long again as the calyx. *Stamens* five, broad, flat, adhering to the tube of the corolla, and nearly as long. *Anthers* brown, linear, having a transparent membranous apex, incumbent, two-celled, cells arranged side by side, dehiscing internally by a longitudinal slit from the base to the apex, each cell of the anther joined with each other at the base, and thus giving to the base of the anthers a forked appearance when arranged in the corolla. *Style* longer than the corolla, smooth bifid at the apex. *Achenia* quadrangular.

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A new and exceedingly pretty species of *Onosma*: which, according to Ledebour, is allied to *O. Echioides* and *tinctorium*, but differing from them in the form of the *achenia* and the size of the flowers.

It is also allied to *O. Gmelini*, but from that it is distinguished by its branched stem, and by having the anthers included, not exserted, as well as by the deeper colour of the flowers.

This plant is growing in the Birmingham Botanic Garden, where it was raised

from Russian seeds in the spring of 1838. As only one plant vegetated at that time, it was taken up, divided in the autumn, and protected in a cold frame during the winter; but there is no doubt of its being perfectly hardy.

Its duration is stated by Ledebour to be perennial, but it probably may be only biennial. It may be increased by seeds, which is the best way of obtaining good plants of all the *Onosmas;* though it might also be increased by cuttings. It will thrive in any common soil, and will flower in June and July.

The generic name is derived from ὄνος, an ass, and ὀσμὴ, smell, from the supposition that these plants are grateful to that animal. The specific name *setosum* alludes to its bristly appearance.

Fig. 1, calyx; 2, corolla, laid open to show the stamens; 3, pistil; 4, ovarium, deeply divided into four lobes.

2
2
1
3

# SALVIA ARGENTEA.

(*Hoary Salvia.*)

LINNEAN SYSTEM.
DIANDRIA MONOGYNIA.

No. 112.

NATURAL ORDER.
LAMIACEÆ, *Lindl.*; LABIATÆ, *Juss.*

## GENERIC CHARACTER.

Salvia. (Lin.) *Calyx* ovatus, tubulosus, vel campanulatus bilabiatus; labio superiore integro vel tridentato, inferiore bifido, fauce intus nuda. *Corolla* tubo incluso vel exserto, æquali ventricoso vel ampliato, intus nunc piloso-annulato, nunc nudo vel ad basin in latere inferiore processibus vel dentibus 2 instructo; limbo bilabiato; labio superiore erecto vel rarius patente recte vel falcato, integro vel brevitèr emarginato; inferiore patente, breviore vel longiore, lobis lateralibus oblongis vel rotundatis patentibus reflexis, vel contorto-erectis, medio plerumque latiore integro vel emarginate. *Staminum* superiorum rudimenta nulla vel parva, claviformia; fertilia (inferiora) 2 prope faucem tubi inserta; filamenta brevia, sub horizontalia, vel rariùs erecta, apice cum anthera articulata et supra articulationem plerumque breviter producta, rarissime subcontinua. *Antheræ* dimidiatæ. Connectiva elongata, linearia, transversè cum filamento articulata, antice sub labio superiore corollæ adscendentia, et apice loculum fertilem linearem adnatum vel versatilem ferentia, postice deflexa vel erecta nunc loculum alterum subconformem minorem polliniferum vel difformem cassum ferentia, nunc dilatata vel rarius brevissime acuta, libera, vel sæpius variis modis inter se connexa vel connata. *Ovarii* discus antice glandulifer, glandula lobis subæquali. *Stylus* adscendens, apice bifidus lobis nunc subulatis æqualibus, vel superiore longiore, nunc inferiore vel utroque rotundato dilatato complanato, stigmata plerumque minuta, terminalia, vel in majore parte loborum styli decurrentia. *Achenia* ovoideo-triquetra, sicca, glabra, plerumque lævissima. *Benth. Labiat.* p. 190.

*Calyx* ovate, tubulose, or campanulate, two-lipped; upper lip entire or three-toothed, the lower one divided, the throat inwardly naked. *Corolla* with the tube included or exserted, equal, ventricose or ampliate, sometimes with a hairy ring within, sometimes naked, or possessing at the base of the inferior side two processes or teeth. *Limb* two-lipped, upper lip erect, rarely patent, straight or falcate, entire or shortly notched; lower lip patent, shorter or longer, having the side lobes oblong, or rounded, patent, reflexed, or contorted-erect; the middle lobe mostly broader, either entire or notched. The rudiments of the upper stamens none, or small, and club-shaped; the fertile ones (inferior) 2, inserted near to the throat of the tube. *Filaments* short, somewhat horizontal, or rarely erect, articulated at the apex with the anther, and above the articulation generally shortly elongated, very rarely somewhat continuous. *Anthers* dimidiate. *Connective* elongated, linear, transversely articulated with the filament in front ascending under the upper lip of the corolla, and bearing at the apex a fertile linear cell, which is either adnate or versatile, behind duplexed or erect, sometimes bearing another small cell somewhat of the same form, less, bearing pollen, or sometimes of a different form and sterile, sometimes dilated, or rarely very short, acute, free, or frequently connected, or joined in various ways with each other. *Disc* of the ovarium bearing glands in the front, glands somewhat equal to the lobes. *Style* ascending, divided at the apex, lobes sometimes subulate equal, or the upper one the

longest, sometimes the inferior, or both rounded, dilated, complanate. *Stigmas* oftentimes minute, terminal or decurrent in the greater part of the lobes of the style. *Achenia* of a three-sided oval shape, dry, glabrous, generally very smooth.

SPECIFIC CHARACTER.

S. argentea; arachnoideo-pubescens, viscosa, ramosa; *foliis* ovatis eroso-crenatis petiolatis basi subcuneatis; verticillastris 6—10, distantibus, floralibus cordatis magnis acuminatis concavis apice subspinosis; *calycibus* campanulatis striatis villosis, superiore labio tridentato subæquali, inferiore bidentato; dentibus subspinosis; *Corollis* calyce subtriplo-longioribus, fauce ventricosa, labio superiore maximo falcato compresso, inferiore lobis lateralibus oblongi erectis.

Covered over with an arachnoid pubescence, viscid, and branched; *leaves* ovate, closely crenate, petiolate, somewhat cuneate at the base. Verticillasters from 6 to 10, distant; *floral* leaves cordate, large, accuminate, concave somewhat spiny at the apex; *calyx* campanulate, striate, villous, having the upper lip three-toothed, somewhat equal, the lower lip two-toothed; *teeth* somewhat spiny; *corolla* about thrice as long as the calyx, throat ventricose, the upper lip large, falcate, compressed, the lower with the lateral lobes oblong, erect.

Salvia Argentea.—*Lin.*—*Jacq. et Sm. Flor. Græc.*—*Benth. Lab.* p. 226.—S. patula.—*Desf.*

Sclarea Argentea.—*Mill.*

Salvia Candidissima.—*Guss.* S. Æthiopis, *Brot.* S. atlantica, *Pers.*

Descr.—Whole plant more or less viscid. *Stem* about 4 feet high, square, angles obtuse, covered over with a long pubescence, branched root. *Leaves* and the lower ones on the stem 6 to 8 inches long, petiolate, and from 4 to 6 broad, rugose, more or less closely crenate, and beautifully covered with a soft arachnoid pubescence, which is more abundant on the under side of the leaves of the flowering plants, or the plants which are young and do not flower, it forms a very conspicuous feature; the veins have also a singularly delicate white appearance. *Panicle* branched, from 2 to $2\frac{1}{2}$ feet long, usually divided into three parts. *Verticillasters* distant, containing about 6 flowers, which have a peculiar effect from their erect position. *Corolla* whitish, three times as long as the calyx; the upper lip assumes at the point a purple appearance arising from a purple pubescence; the lower tip is tinted on the lateral divisions with yellow; the tube is contracted in the centre. *Calyx* striated, pubescent, stipitate, teeth somewhat spiny. *Stamens* and style longer than the corolla, incurved within the flower. *Anthers* linear, pollen ovate, smooth, without any transparent mark in the centre. *Stigma* in the divisions equal. *Floral-leaves* concave, as long as the calyx, acuminate, and somewhat spiny. *Achenia* smooth, surrounded by an evident gynobasis.

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This interesting species of *Salvia* is growing in the gardens of the Birmingham Botanical and Horticultural Society, where it was raised from Russian seeds received from the late Mr. Hunneman in the year 1838. It appears to be biennial, and is perfectly hardy. It is a native of Europe, Asia, and Africa, and although first introduced into this country in the year 1768, is exceedingly rare in collections. It will grow in any common soil; begins to flower at the end of June, and will continue to flower for some time. There is reason to believe, from its present appearance, that it will ripen plenty of seeds.

This species, according to Mr. Bentham, is allied to *S. spinosa*, and *S. tingitana*.

For the etymology of *Salvia*, see vol. i. under that head. *Argentea* (silvery) has reference to the whitened appearance of the leaves.

Fig. 1, a flower; 2, the stamens and appendages; 3, style and bifid stigma.

# MORMODES PARDINA.

(*Panther-spotted Mormodes.*)

LINNEAN SYSTEM.
GYNANDRIA MONANDRIA.

No. 113.

NATURAL ORDER.
ORCHIDACEÆ § VANDEÆ.

GENERIC CHARACTER.

Mormodes. (Lindl.) *Perianthium* subpatens vel connivens. *Sepala* æqualia, basi subconcreta. *Petala* latiora, conformia. *Labellum* sellæforme, ascendens, subcuneatum, trilobatum, cum columnâ connatum. *Columna* semiteres, subtorta; gynizus longus; clinandrium posticè acuminatum. *Pollinia* 4, per paria connata, caudiculæ crassæ affixa, glandulæ carnosæ crassæ adhærenti.—Habitus Cataseti.

*Perianth* somewhat patent, or connivent. *Sepals* equal, somewhat concrete at the base. *Petals* broader, similar in form. *Lip* saddle-shaped, ascending, somewhat wedge-shaped, three-lobed, connate with the column. *Column* semiterete, somewhat twisted; gynizus long; clinandrium posteriorly acuminate. *Pollen-masses* 4, united by pairs, affixed to a thick caudicula, which adheres to a thick fleshy gland.—Habit of Catasetum.

SPECIFIC CHARACTER.

M. Pardina: pseudobulbis fusiformibus subcompressis foliis lineari-lanceolatis 3-plo brevioribus; *racemo* recurvo multifloro foliis breviore, sepalis petalisque subæqualibus ovato-lanceolatis acutis conniventibus, labelli trilobi lobis lateralibus acutis decurvis, intermedio elongato acuminato.

Pseudo-bulbs fusiform, somewhat compressed, three times shorter than the linear-lanceolate leaves; *raceme* recurved, many-flowered, shorter than the leaves; *sepals* and petals somewhat equal, ovate-lanceolate, acute, connivent; *lateral* lobes of the 3-lobed labellum acute, decurved, the intermediate lobe elongated, acuminate.

Mormodes pardina.—*Bateman. Orchid. Mex. et Guatemala*, tab. 14.

Descr.—*Pseudobulbs* about eight inches long, fusiform, covered by the sheathing bases of the leaves. *Leaves* numerous, about 18 or 20 inches long, an inch and a half, and occasionally two inches wide, with an acute (almost acuminate) apex. *Roots* tortuous, fleshy. *Scape* recurved, about a foot long, with from 12 to 15 flowers, crowded, of a rich yellow colour, copiously covered with dark reddish brown spots. *Sepals* ovate-lanceolate, rather acuminate, nearly an inch and a half long; the petals similar in form, rather shorter, but somewhat broader than the sepals. *Lip* somewhat fleshy, deeply 3-cleft, the lateral lobes deflexed on the sides, acute, shorter than the middle lobe, which is considerably acuminate, and nearly as long as the petals. *Column* somewhat twisted; the stigmatic cavity extending to its base. *Anther and pollen-masses* precisely similar to those of Catasetum.

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For an opportunity of figuring this new and interesting species we are indebted to George Barker, Esq., of Springfield, near Birmingham, by whom it was

imported. It is a native of South America, whence it was sent by Mr. Ross, who found it in the wildest part of the Cordillera range. Mr. Bateman's specimen appears to have been discovered by Baron Karwinski, in Oaxaca, and communicated some years since to the collection at Knypersley, where it flowered last year. It has been recently figured in Mr. Bateman's splendid work on the orchidaceous plants of Mexico and Guatemala ; though the specimen in that gentleman's collection differs from ours in some few points. A remarkable variety is now in flower for the second time at Mr. Barker's, the flowers of which are of a clear primrose-yellow without spots. The flowers are highly odoriferous ; their perfume, however, is peculiar, and too powerful to be generally agreeable.

The genus *Mormodes* was named and the first species (*M. atropurpurea*) described by Dr. Lindley from a plant in the collection of John Willmore, Esq. of Oldford, and subsequently figured in the 1st vol. of the Floral Cabinet. It has been suspected that *Mormodes* would share the fate of *Myanthus* and *Monocanthus*, and merge in the genus *Catasetum :* we are, however, inclined to regard the *twisted column* in Mormodes as a marked peculiarity that will always distinguish it from other kindred genera.

For the etymology of *Mormodes*, vide vol. i. The Latin adjective *pardina* has reference to the panther-like spots of the flowers.

Fig. 1. Germ with twisted column and 3-lobed lip. 2. Anterior view of the pollen-masses, one of which shows a horizontal section. 3. Posterior view of the same. 4. Anther-case.

## ON THE AQUEOUS EMANATION, OR EXHALATION OF VASCULAR VEGETABLES.*

Every one is aware that fresh vegetables exposed to the air yield to it a notable portion of their humidity. Mariotte appears to have been the first who endeavoured to account for this phenomenon. He placed a leafy branch in a closed vessel, and, in two hours, he collected two spoonsful of water deposited on the sides of the vessel. Hales has measured with greater exactness the transpiration of the *Helianthus annuus*, or annual sunflower. He planted one, three feet high, under a vase, the orifice of which was closed by a metal plate pierced with two holes, through one of which the stalk passed, and through the other the plant was watered. The pot and plant were weighed morning and evening, during fifteen days. The result of this observation was, that the plant lost by evaporation a quantity equal to twenty ounces daily. A Cabbage of moderate size, lost, under the same circumstances, nineteen ounces. Plenk admits that a stalk of *Maize* exhales seven ounces of water a day; a Cabbage 23 oz.; a *Heliotrope* 24 oz. &c.; and Guettard calculates that a branch of the Dog-wood, weighing five drachms and a half, plunged at its base into water, exhales in twenty-four hours a quantity of water equal to one ounce, three drachms, and three quarters. From very complicated calculations, Hales has proved that this evaporation of the Sunflower, or the Cabbage, is, in an equal measurement of surface, seventeen times greater than that which the human body experiences from insensible perspiration. Were it possible that this calculation could be contradicted, there can be no doubt but that vegetables evaporate a great quantity of water; but upon a nearer examination of the facts, it may be clearly perceived that there are various phenomena connected with them which must be necessarily distinguished.

1st. If fleshy fruits are placed in the open air, such as apples or grapes, or tubercules, such as potatoes, it is perceptible, at the termination of a longer or shorter time, that they have lost something of their weight, and deposited a little humidity on the sides of the cavity which encloses them; but this effect is very slow, and may continue many months before the loss (*deperdition*) becomes very sensible. It takes place in a very gradual manner, and is more active from heat than from any other cause. This slow operation, which tends to deprive gradually all the cellular parts of vegetables of water, and which works through their tissue without visible pores, is what I call the *insensible deperdition*. It is perhaps a phenomenon independent of life, or which at least does not appear to act an important part in the vital phenomena. This *deperdition* is explained by the permeability of the tissue, and the tendency of water to evaporate when it is

* From Decandolle's "Physiologie Végétale."

near the air. Its exact appreciation is rendered complicated by the small quantity of carbon, which, in certain cases, as we shall see presently, the oxygen of the air draws from the vegetable tissue. In the cases to which I here allude, the parenchymatous parts are surrounded by a cuticle, or an *epidermis*, without *stomata* or evaporatory pores, which being but very slightly permeable, retain the humidity, and only suffer a very minute portion to escape.

2nd. If the organs, or vegetables, deprived of their true cuticle, be exposed to the fresh air, such as the leaves of plants immersed in water, or those of cellular vegetables, the *deperdition* of water is seen to be very variable in its intensity, according to the kinds selected for experiment. The leaves of plants which live habitually in water, lose in general, with great rapidity, that which their *parenchyma* contains; which M. Ad. Brongniart attributes to the absence of the cuticle. This phenomenon presents itself even in the greater part of the cryptogamic aquatics; but in some of these, and in many cryptogamic aerial plants, the *deperdition* is extremely slow, as is seen in the *mosses*, in certain sea-weeds, in the leathery mushrooms, and more particularly in the lichens. This slowness of *deperdition*, notwithstanding the absence of all real cuticle, appears to be caused either by the cellules of cryptogamous plants being more intimately joined together than those of the parenchyma of ordinary leaves, and thus allowing a less free passage for the water to evaporate; or, by the exterior layers in many cases being arranged sufficiently close to perform the office of the cuticle or epidermis; or, finally, by some hygrologic disposition of the tissue.

3rd. Finally—If leaves are placed in the same circumstances, or, in general, those organs invested with a cuticle more or less furnished with *stomata*, then more active phenomena are observed; that is to say, the exhalation of an immense quantity of water in a very short time. It is this function which exercises itself evidently by the *stomata*, which I designate under the name of *aqueous exhalation*, in order to distinguish it from the preceding. It is very probable that the parts of the foliaceous organs which have *stomata*, are also susceptible of the *insensible deperdition*, and that consequently, we confound the results of these two causes in the experiments cited; but the *insensible deperdition* enters into the phenomenon by so small a fraction, that it may be neglected without inconvenience. We will now confine ourselves to the examination of the circumstances of this important function, in order to deduce from it its physiological action.

All the parts of a plant do not exhale water in the same quantity, and every experiment tends to prove that (except the facts which relate to the two preceding cases, and everything besides being equal) the emanation of each part is in direct accordance with the number of its *stomata*. Thus the surface of the leaves which are furnished with *stomata*, exhale more than those which are deprived of them; the green bark which is furnished with *stomata* more than those which

want them; and on the contrary, roots, grains, and in general all organs without *stomata*, are only subjected to the *insensible deperdition*. If vegetables are compared with each other, we arrive at the same general results: thus, fleshy leaves that have few *stomata* exhale but little; petals and fleshy fruits which have none, appear only submitted to the *insensible deperdition*.

All these facts are the results of experiments made by Guettard, St. Martin, Bonnet, and Senebier, before even the existence of *stomata* was known. Mr. Knight confirmed them, in showing that a leaf of the vine exhaled minute drops of water only from the inferior side, that is to say, the side supplied with *stomata*, and not the superior side.

Those outward circumstances, which might have influence over this phenomenon, are ordinarily heat and light; but heat, which seems to act sensibly upon the *deperdition*, appears on the contrary to have very little upon the exhalation. The very little augmentation in the weight lost by vegetables exposed to a temperature more or less great (provided that the degree of heat sufficient to disorganise their tissue be out of the question) might indeed be attributed quite as well to the acceleration of the *insensible deperdition*, as to that of exhalation. Light appears to be, on the contrary, of all the exterior causes, that which acts most intensely in exciting exhalation. Senebier has observed that when a plant is placed in total obscurity, it ceases suddenly to transpire, although it continues still to absorb for some time; so that its weight augments a little. Hales had already noticed that plants only transpired during the day, and that they augmented a little in weight during the night. This phenomenon depends either upon the cessation of exhalation; or upon the external air becoming more humid and depositing small drops of water on their surface; or, finally, upon the green parts absorbing a little oxygen during the night. Guettard and Senebier have enclosed leafy branches in flasks, and have placed them, some in the light, the others in obscurity; the first have given out a much greater quantity of water than the second. I have observed that the light of lamps produces the same result as that of the sun, as regards their relative intensity. This effect of light is indeed in proportion to the intensity of the light; and the effect produced by the interposition of a linen cloth or a sheet of paper is well known. Gardeners and vendors of bouquets know very well that they preserve their branches of trees much longer fresh in an obscure situation than in a well-lighted one. If living plants are kept too long from the influence of the solar rays, as they will cease to transpire and continue to absorb, they will acquire by degrees a state of dropsy, which disposes to the disarticulation of the leaves from the stalk, and announces a state of feebleness, owing to the too great abundance of water. We will return, elsewhere, to the subject of the influence of obscurity upon plants or the parts of plants which develop themselves therein. I confine myself here to the rendering evident the extreme influence of light in exciting transpiration.

(*To be continued.*)

## ON PRESERVING THE BEAUTY OF FLOWERS.

Besides the culture of flowers, which includes propagation, nursing, and rearing them up to a perfect flowering state, other cares are necessary, in order that the blossoms be not tarnished or destroyed by scorching sunshine, dashing rain, or by withering winds; and, above all, that insects may not be allowed to ruin or disfigure those gems which have been nurtured with so much labour, and expected with so much anxiety.

In glass structures of any kind or dimension, the enclosed atmosphere is completely under control; neither too high or too low a temperature, dryness, or humidity—neither the want of air or light—or these in excess, need be dreaded as assailants; and if insects appear, they are so much within the reach and manipulation of the manager, that the plants need never suffer. But as regards plants in the open air, and which are most commonly distributed over a considerable extent of surface, neither unceasing care, nor the utmost vigilance, is available in defending favourite plants from various attacks to which they are liable.

We are led to make these observations from having not long ago visited one of the finest flower-gardens in the vicinity of the metropolis; and in which the collection of roses is a distinguishing feature. These, of every known species and variety, are here in the greatest profusion; planted, managed, and trained in every possible way: as creepers upon the ground, as standards in every kind of device, as well upon elegant wire trelliage as without, and also upon a considerable length of south wall. The rose-trees were all in the highest health, and covered with the most exuberant display of promising buds. The very prospect of such a magnificent bloom of roses was delectable even in idea. But the prospect was clouded by what we clearly foresaw would be an unavoidable sequence—the trees, and shoots, and buds, were literally enveloped in myriads of *aphides*, which had then seated themselves on almost every plant, particularly those on walls, and such as were trained as round-headed standards, and which would most certainly mar the beauty of the general bloom.

Now what remedy can be provided against this serious drawback on the pleasures of the flower-garden? Were the trees in a house, or if they were in pots, they could be enclosed in a glazed frame: there they could be fumigated and the insects speedily banished. But in the open borders, on walls, and as single standards, there is difficulty in applying fumigation effectually; and yet we think the difficulty is really not insurmountable.

Every florist knows the use of the fumigating bellows, and how useful they are in forcing-houses and frames. Now a fumigating-cloth, made of light canvas and of a sufficient size, would answer well for walls; and the same cloth supported over a bed, or single plant, by a light moveable skeleton frame of either wood or wire, would be quite effectual for confining smoke long enough to prove mortal to the

insects. And with respect to standard trees, we presume that a hand-glass filled with smoke and held for a few minutes over the closely pruned head, would protect those beautiful tufts of blossom from the common enemy.

It may appear, that as the smoke of tobacco is noxious and most fatal to the insects, its application would deprive the flowers of half their value, by tainting, or robbing them of their fragrance. But that this may not happen, the smoke should be applied when the flowers are only in bud; and which would give time for the tobacco taint to escape before they blow.

Sprinkling the trees with water previous to fumigating, is considered advisable; as more likely to arrest the smoke, as well upon the plants as upon the sensitive organs of the insects.

Many other flowers may be defended from the attack of aphides, when in the bud state, by the fumes of tobacco timeously administered. Both carnations and pinks often require such defence; and even the common China-asters, so difficult to grow well for several years past, were their seedlings pricked into a close frame, or under hand-glasses, and frequently fumigated, might render them proof against that minute aphis or other insect to which they have been so subject of late years.

In seeking remedies for such disasters, the old proverb constantly recurs—would not "prevention be better than cure?" yes, surely; and as we are pretty certain that the eggs of the aphis, as well as those of many other insects, are laid on the plants in the autumn—that season should be chosen to dust or drench the plants with some offensive preparation, to disgust, if possible, the mothers from choosing those plants for their nurseries which we wish to preserve. This is an experiment which has often been suggested; but never followed up, perhaps, with the necessary perseverance; nevertheless there can be no doubt but that the autumn is the best season for protecting plants against their being pitched upon by the provident mothers as stations, and to furnish food for their young of the next spring.

Supposing then that a rosarium were intended to be fortified against the seizure of the aphides, tortrices, or other insects which beset rose-trees; the manager must provide himself with a large water-butt full of soap-suds from a laundry. This should be strongly impregnated with flour of brimstone; and if a gallon or two of tobacco liquor be added, the mixture would be still more efficacious. This liquid should be applied with a garden engine, in order that it may be distributed equally and so forcibly as to lodge on every crevice of the bark, and in every hollow or cleft about the buds and branches. The first application may be made in August, or as soon as the principal bloom is over; and should be repeated in every following month till Christmas. And if, to make doubly sure, a drenching were given when the buds have pushed about a quarter of an inch, and also then fumigated, would go far, we think, to secure rose-trees from the attack of aphides, for one season at least.

Besides the strong taint which would remain on the exposed parts of the trees, the rank effluvia ever rising from the ground, will together operate to keep the insects off, or drive them to some more agreeable locality.

Amateur and professional florists may object that this plan of prevention will entail upon them a serious addition of labour; but where it is determined to have and keep a flower-garden in the highest state of perfection, neither expense will be grudged by the owner, nor any additional labour be unwillingly rendered by the manager, to accomplish what will redound so much to his own credit, and the owner's satisfaction.

## BOTANICAL NOTICES OF NEW PLANTS.

### DICOTYLEDONES.

#### LEGUMINOSÆ.

Edwardsia Macnabiana. Grah. Mr. MacNab's Edwardsia. *Bot. Mag.* t. 3735. This is a very handsome shrub (the height is not given), bearing a profusion of deep-yellow flowers. Whether it is a species, or only a seedling variety of *E. grandiflora*, is doubtful; but it is instantly recognised from that species by its nearly equal petals, by the wide separation of the petals of the keel, and by its flowering when in full leaf. It had been planted as a standard, and also against the south wall in the Edinburgh garden. It did not blossom as a standard, but blossomed against a south wall. In the last winter, so signally destructive to trees and shrubs, this suffered much less than either *E. grandiflora* or *microphylla*. Judging from the plate in the Magazine, it would appear to be a desirable plant to place against a south wall as an ornament.

#### PHILADELPHACEÆ.

Philadelphus laxus. Schrad. Weak-branched Philadelphus, *Bot. Reg.* N. S. t. 39. This is a hardy shrub, bearing large white flowers. It is a native of North America, and is by Dr. Lindley supposed to be the *P. grandiflora* of Elliott, Flora Carolina. The leaves of this species are smaller than what usually occurs in this genus, very sharp-pointed, and the toothing unusually sharp: the uppermost leaves become gradually narrower, until those immediately below the flower are linear and entire; their upper surface is bright-green, with a few white hairs, and the under side is much more closely covered. The flowers are nearly scentless. The height of this species is about five feet, covering a large space on the ground by its slender branches. It comes into leaf early, and the young shoots are liable to be killed by the frost. It is from the end of the lateral shoots that the blossoms appear in this genus. *Bot. Reg.*

#### COMPOSITÆ.

rindelia inuloides. Dun. Flea Bane-like Grindelia. *Bot. Mag.* t. 3737. This plant bears yellow flowers, which have a showy appearance. It is a native of Texas, where it was detected by Mr. Drummond, and whence seeds were sent

by him to the Glasgow Botanic Garden, in which establishment it flowered in the open border in September, 1835. *Bot. Mag.*

GESNERIEÆ.

Gesneria stricta. Hook. Upright Gesneria. *Bot. Mag.* t. 3738. This Gesneria is stated to be upwards of five feet high, and the flowering portion to extend for a foot and more. The flowers, however, judging from the plate in the Magazine, are not so brilliant as many of the species. Roots of it were sent by Mr. Tweedie from Rio Grande, in South Brazil, to the Glasgow Botanic Garden, and in the stove of that establishment it produced its flowers in 1835.

It resembles *G. Sceptum* in its habit; but the flowers are remarkable for the curvature on the upper side, and following its direction: the style is singularly geniculated at the bore; the upper, too, is much longer: the style and anther are exserted. *Bot. Mag.*

BORAGINEÆ.

Cynoglossum Cœlestinum. Lindl. Blue and white Hounds-tongue. *Bot. Reg.* N. S. t. 36. This is a pretty plant, but only biennial, and said to inhabit the north part of India. It was raised at the gardens of the London Horticultural Society, from seeds which were presented to that establishment by John Nimmo, Esq., of Bombay, and flowered for the first time in August, 1838. It differs from *C. uncinatum* in its fruit, and in its leaves not being at all acuminate, from *C. microglochin*, *longiflorum*, and *grandiflorum*, in having the cauline leaves not rounded at the base, and from *C. glochidiatum* in its smaller, and much less hairy flowers, as well as its broader and more cordate leaves. *Bot. Reg.*

ASCLEPIADACEÆ.

Ceropegia Vincæfolia. Hook. Periwinkle-leaved Ceropegia. *Bot. Mag.* t. 3740. This is a very handsome climbing plant, bearing dark-purple petals, and was received at the Glasgow Botanic Garden from Bombay, through J. Nimmo, Esq. It requires the stove, and its flowers are produced in abundance in the month of September. *Bot. Mag.*

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MONOCOTYLEDONES.

Lilium Thunbergianum. Roem. Thunberg's Orange Lily. *Bot. Reg.* N. S. t. 38. This is a noble plant, and was drawn at the establishment of Messrs. Rollisons in June 1838, and is one of those which have been introduced into Europe from Japan by Dr. Siebold. It was originally found by Thunberg, who first referred it to *L. Philadelphicum*, although its sepals and petals are sessile; afterwards to *L. bulbiferum*, although it had no bulbs, and is also destitute of the papillæ, which render the inside of the flower of that species scabrous. In the cultivation of this handsome species (which grows about three feet high, and flowers from the beginning of July to the end of September, if properly treated), the bulbs should be fresh potted, or planted in a pit that is well protected from wet, late in the autumn, or very early in the spring, in a mixture of sandy-peat

loam, and a portion of well-rotted dung. The bulbs, when potted, should be kept dry until they begin to grow, when they should have water sparingly at first, to be increased as its vigour is developed. *Bot. Reg.*

ORCHIDACEÆ § MALAXIDEÆ.

Dendrobium Jenkensii. Wallich. Captain Jenkins' Dendrobium. *Bot. Reg.* N. S. t. 37. This is a small pretty species (not above six inches high), bearing yellow flowers; it has been distributed by Dr. Wallich to many collections, and is therefore by no means uncommon. It was originally received by Dr. Wallich from Captain Jenkins in 1836. It was figured from specimens in the collection of Messrs. Loddiges. *Bot. Reg.*

EPIDENDREÆ.

Bletia Parkinsoni. Hook. Mr. Parkinson's Bletia. *Bot. Mag.* t. 3736.

This appears to be a very distinct and delicate species of Bletia, which was sent to Woburn Abbey by Mr. Parkinson, H. M. Consul-General at Mexico, and in the stove of that establishment it flowered in January last, 1839. The flowers are much more narrow than *B. reflexa*, which is considered its nearest affinity. The flowers are of a most beautiful rose colour, having the tip and column beautifully variegated with yellow and purple. *Bot. Mag.*

## CALENDAR OF GARDENING OPERATIONS FOR AUGUST.

In this month such Pelargoniums will require to be cut down as are past flowering; and cuttings put in if wanted for late flowering next season. The plants should also be re-potted, by reducing their balls of earth, and also the size of the pots, and re-potting in light sandy soil.

Stove and greenhouse plants ought also to be re-potted where it is necessary.

Layer American plants, that require being struck from the young wood; several other shrubs, such as require common soil, ought also to be layered.

Prick out rooted Pink Pipings to strengthen them before they are finally transplanted into the flowering beds.

Collect seeds of the Annuals and other plants as they ripen.

Stake and tie up mostly all plants requiring that care.

Hoe and keep neat all beds, borders, &c.

Set out glasses and other traps for destroying wasps, flies, &c. which are very destructive to the ripening fruit.

Saxifrages and other Alpine plants will require dividing, to enable them to withstand the ensuing winter.

Sow Annuals for early flowering next season, of such as are known to be perfectly hardy, and particularly Californian plants.

Sow Mignionette in pots for spring flowering.

Put in Pansies and double wall-flower cuttings in a shaded border.

# RAFNIA TRIFLORA.

(*Three-flowered Rafnia.*)

LINNEAN SYSTEM.
MONADELPHIA DECANDRIA.

No. 114.

NATURAL ORDER.
LEGUMINOSÆ.

## GENERIC CHARACTER.

Rafnia. (Thunb.) *Calyx* ad medium 5-fidus, lobis 4 superioribus latioribus nunc distinctis, nunc inter se variè subconnexis, infimo setaceo acutissimo. *Corolla* glabra, carinâ obtusâ, vexillo subrotundo. *Stamina* monadelpha, vagina demum supernè fissâ. *Legumen* lanceolatum compressum polyspermum. *Suffrutices* Capenses glabri, exsiccatione sæpiùs luridonigrescentes. *Folia* simplicia integra non amplexicaulia alterna, floralia interdùm opposita. *Flores* flavi.—(*Decand. Prod.* vol. ii. p. 118.)

*Calyx* divided into 5 parts to the middle, the 4 upper lobes broader, sometimes distinct, sometimes variously joined; the last division setaceous, and very acute. *Corolla* smooth, keel obtuse, standard roundish. *Stamens* monadelphous, sheath afterwards splitting on the upper side. *Legume* lanceolate, compressed, many-seeded. *Shrubs* natives of the Cape of Good Hope, smooth, in drying frequently becoming blackish. *Leaves* simple, entire, not amplexicaul, alternate; floral leaves sometimes opposite. *Flowers* yellow.

## SPECIFIC CHARACTER.

R. triflora. Glauca; *foliis* ovatis, vel obovatis; *ramis* angulatis; *pedunculis* in axillis superioribus, sæpius ternis unifloris bibracteolatis.

Glaucous; *leaves* ovate, or obovate; *branches* angular; *peduncles* situate in the upper axils of the leaves, oftentimes in threes, one-flowered, and two bracts.

Rafnia triflora.—*Thunb.*

Crotalaria triflora.—*Berg.*

Borbonia cordata.—*Andr.*

Descr.—The whole plant glaucous. *Stem* about three feet high, angular. *Leaves* alternate, either ovate or obovate, acute; midrib strong, feather-veined; veins anastomosing. *Flowers* yellow, pedicellate. *Pedicels* about an inch long, situated in the axils of the leaves, arranged in threes (but only one flower opening at once); standard ovate; margin reflexed; wings the length of the keel; apex acute and incurved. *Keel* obtuse, of a paler yellow than either the wings or standard. *Calyx* divided in 5 parts, unequal, the two upper divisions broader than the two lower ones. *Stamens* arranged in one set, filiform. *Anthers* dehiscing towards the axis. *Pollen* smooth, spherical. *Stigma* capitate. *Ovarium* compressed, smooth. *Ovules* kidney-shaped.

This is a plant of great beauty when properly cultivated. The shoot should be stopped to prevent it becoming tall, by which means the plant is made to grow bushy, otherwise it will only be one-stemmed.

It should be potted in loam, peat, and sand.

It does not appear to strike readily from cuttings, and therefore care should be taken to impregnate the blossoms to ensure the formation of seeds, which readily vegetate. Although introduced in 1786, it is a very rare plant even in good collections.

It flowers in June and July.

It is a native of the Cape of Good Hope; but the plant in the collection of the Birmingham Botanical and Horticultural Society (from which our drawing was taken) was raised from seeds received amongst many others from New Holland.

The generic name *Rafnia*, is in compliment to Mr. C. G. Rafn, a Dane, and a botanical author. The specific name *triflora*, alludes to the circumstance of the flowers being arranged in threes in the axils of the leaf.

Fig. 1, standard; 2, keel; 3, wing; 4, germ, stamens, and style.

# LINARIA DELPHINOIDES.

(*Delphinium-like Linaria.*)

LINNEAN SYSTEM.
DIDYNAMIA ANGIOSPERMA.

No. 115.

NATURAL ORDER.
SCROPHULARINEÆ.

GENERIC CHARACTER.

Linaria. (Tourn.) *Calyx* 5-partitus. *Corolla* personata, tubo abbreviato inflato basi calcarato, palato ad faucem prominulo, interdum depresso. *Stamina* basi pilosa. *Stylus* apice incrassatus vel bifidus; stigmate emarginato vel bilobo. *Capsula* operculis circumscissis vel plurimis valvæformibus vel dentiformibus dehiscens.

*Herbæ*, vel rarius suffrutices. *Folia* alterna, opposita vel verticillata, integerrima, lobatave. *Flores* ad summitates ramorum racemosi, seu spicato-racemosi, vel solitarii axillares.

*Calyx* divided into 5 parts. *Corolla* personate; tube shortened, inflated, spurred at the base; palate prominent at the throat, sometimes depressed. *Stamens* hairy at the base. *Style* thickened at the apex, or divided; *stigma* notched, or two-lobed. *Capsules* dehiscing by means of lids cut round, or in many by valviform or dentiform dehiscings. *Herbs*, rarely shrubs. *Leaves* alternate, opposite or verticillate, entire or lobed. *Flowers* arranged at the top of the branches either in racemes, or spiked racemes, or solitary axillary.

SPECIFIC CHARACTER.

L. delphinoides. *Caule* gracili ramosissimo, glabro; *foliis* alternis subulatis; *floribus* racemosis purpureis striatis calcaribus arcuatis longissimis; *pedunculis* et calicibus pilosis; *corollæ* lobis superioribus obtusis, inferioribus emarginatis; *calycibus* reflexis.

*Stem* slender, very much branched, smooth; *leaves* alternate, subulate; *flowers* racemose, purple-striped spurs bowed very long; *peduncles* and calices hairy, upper lobes of the corolla obtuse, the inferior ones notched; *calices* reflexed.

Linaria delphinoides.—*Gay.*

Descr.—Biennial? *Stem* about 12 inches high, very much branched; smooth, except at that part where it begins to bear flowers, then pubescent. *Leaves* alternate, subulate. *Flowers* pedicellate, arranged in racemes, purple. *Pedicels* pubescent. *Corolla* purple-striped, two-lipped, the upper lip bifid, divisions obtuse, entire; the lower lip trifid, divisions obtuse and notched; palate inflated, much paler than the other part of the flower, and more delicately striated. *Spur* slender, and delicately bowed, or gracefully curved. *Tube* of the corolla about three lines long. *Calyx* pubescent, divisions reflexed. *Stamens* 4, two long and two shorter. *Anthers* dehiscing longitudinally, and towards the axis. *Pollen* yellow, minute, opaque, oblong. *Style* thickened towards the apex. *Stigma* entire.

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This is an exceedingly pretty plant, growing in the collection of the Birmingham Botanical and Horticultural Society, in whose garden it was raised from seeds, which were received at that establishment in 1838, from St. Petersburgh,

through the late Mr. Hunneman. Out of the whole packet of seed only one plant was produced, and that was preserved in the cold frame during last winter, from which cuttings were struck in the spring, and which have been covered with flowers for the last three months. They have been growing out of doors in common garden soil. The plant has the appearance of being only biennial. It appears to perfect many capsules of seeds, but it may be readily increased by cuttings, which strike freely.

Being a very free flowerer, and of low growth, it is well adapted for ornamenting the flower beds or borders.

The authority for the specific name is Mr. Gay, as stated in the fourth index of the St. Petersburgh Garden; but of what country it is a native we are unable to say.

The etymology of the generic name *Linaria*, is given in vol. i. page 50; the specific name *delphinoides*, alludes to the resemblance of the flowers to those of *Delphinium*.

# UMBILICUS SEMPERVIVUM.

(*Sempervivum-like Navelwort.*)

LINNEAN SYSTEM.
DECANDRIA PENTAGYNIA.

No. 116.

NATURAL ORDER.
CRASSULACEÆ.—(*Decand.*)

## GENERIC CHARACTER.

Umbilicus. (Dec.) *Calyx* 5-partitus. *Corolla* gamopetala campanulata 5-fida, lobis ovatis acutis erectis tubi circiter longitudine. *Stamina* 10 corollæ inserta. *Squamæ* 5 obtusæ. *Carpella* 5 apice attenuata, stylis subulatis.—*Herbæ* Europæ australis aut orientis indigenæ. *Folia* rosulata aut alterna integerrima aut subdentata. *Flores* albidi aut flavi, ramosi nec cymosi.

*Calyx* 5-parted. *Corolla* gamopetalous, campanulate, 5-cleft, with ovate, acute, erect lobes about the length of the tube. *Stamens* 10 inserted into the corolla. *Scales* 5, obtuse. *Carpels* 5 attenuated at the apex, with awl-shaped styles.—*Herbs* natives of southern or eastern Europe. *Leaves* arranged in a rose-like manner, or alternate, very entire or somewhat toothed. *Flowers* whitish, or yellow, branched, not cymose.

## SPECIFIC CHARACTER.

U. sempervivum; *foliis* radicalibus rosulato-aggregatis carnosis cuneatis emarginatis glanduloso-pubescentibus ciliatis, caulinis sparsis oblongo-rotundatis convexis sessilibus; *caule* dependenti; *paniculâ* laxâ multiflorâ.

Radical *leaves* aggregate, arranged in a rose-like manner, fleshy, wedge-shaped, emarginate, clothed with glandular pubescence, ciliated; those on the stem scattered, oblong-rotundate, convex, sessile; *stem* dependent; *panicle* lax, many-flowered.

Cotyledon Sempervivum.—*Bieb. casp.* p. 176; app. n. 46; ann. bot. ii. p. 444; fl. taur. i. p. 351.

Descr.—Whole plant clothed with short, glandular pubescence. *Radical leaves* of a bright, lively green, broadly cuneate, slightly emarginate, and disposed in compact circular tufts, like the offsets of *Sempervivum tectorum* (common house-leek), a mode of arrangement which is well expressed by the term *rosulatus; cauline leaves* few in number, scattered, and clothed like the radical ones with short glandular pubescence. *Stem* from eight to ten inches long, the lower part glabrous, the upper portion pubescent, and terminating in a lax many-flowered panicle. *Flowers* shortly pedicellate. *Calyx* red, deeply 5-parted, the segments acute, slightly reflexed at the apex, and equal in length to the tube of the corolla. *Corolla* of a pale red, bell-shaped, 5-cleft, lobes spreading, or rather reflexed (not erect), in which respect it does not accord with Decandolle's generic character. *Carpels* 5, slightly pubescent, with an elongated apex terminating in short awl-shaped styles with minute simple stigmas; *nectariferous scales* truncate, slightly emarginate, one of which is placed at the base of each carpel.

This very scarce and interesting plant is a native of Eastern Caucasus, where it is found in mountainous and stony places. It is in the collection of the Birmingham Botanical and Horticultural Society, in whose garden it was raised from Russian seeds received in 1837, through the late Mr. Hunneman.

It should be grown in pots filled with loam and sand, using plenty of drainers in the bottoms of the pots. Although it may probably be capable of enduring the severity of our winters, it is likely to be rotted off by damp, on account of its succulent leaves; for which reason it ought to have the protection of the cold frame in winter, and be kept rather dry.—It may be increased by offsets.

Fig. 1, calyx; 2, gamopetalous corolla laid open; 3, the 5 carpels, with their hypogynous scales.

# DENDROBIUM AMŒNUM.

(*Lovely Dendrobium.*)

LINNEAN SYSTEM.
GYNANDRIA MONANDRIA.

No. 117.

NATURAL ORDER.
MALAXIDEÆ § DENDROBIEÆ, *Lindl.*

GENERIC CHARACTER.

Dendrobium (Swartz.) *Sepala* membranacea, ereeta vel patentia, lateralibus majoribus obliquis cum basi produetâ columnæ connatis. *Petala* sepalo supremo sæpiùs majora, nunc minora, semper membranaeea. *Labellum* cum pede eolumnæ artieulatum vel eonnatum, semper sessile, indivisum vel trilobum, sæpiùs membranaceum, nunc appendiculatum. *Columna* semiteres, basi longè produeta. *Anthera* bilocularis. *Pollinia* 4, per paria collateralia. *Herbæ* epiphytæ, nunc eauleseentes, nunc rhizomate repentc pseudo-bulbifero. *Folia* plana, sæpiùs venosa. *Flores* solitarii fasciculati, vel racemosi, speciosi.—(*Lindl.*)

*Sepals* membranaceous, ereet or spreading, the lateral ones larger, oblique, and connate, with the lengthened base of the eolumn. *Petals* most frequently larger than the upper sepal, sometimes smaller, always membranaceous. *Lip* artieulated or connate, with the foot of the eolumn, always sessile, undivided, or 3-lobed, most commonly membranaceous, sometimes appendieulate. *Column* semiterete, with a lengthened base. *Anther* 2-eelled. *Pollen-masses* 4, eollateral, in pairs.—Epiphytie plants, sometimes eauleseent, sometimes with a ereeping rhizoma, bearing pseudo-bulbs. *Leaves* plain, most eommonly veined. *Flowers* solitary, fasciculated, or raeemosc, handsome.

SPECIFIC CHARACTER.

D. amœnum; *caulibus* pendulis graeilibus nebulosis floriferis aphyllis; *foliis* lanceolatis acutis; *floribus* geminatis raeemum spurium formantibus longè peduneulatis divarieatis; *sepalis* oblongis obtusis; *petalis* obtusis sepalo supremo paulò majoribus: *labelli* cueullati limbo ovato obtuso crenulato leviter ciliato; *disco* villoso.

*Stems* pendulous, slender, clouded, flower-bearing, leafless; *leaves* laneeolate, acute; *flowers* in pairs, forming a spurious raceme, with long peduneles, divarieate; *sepals* oblong, obtuse; *petals* obtuse, a little larger than the upper sepal; *limb* of the hooded lip ovate, obtuse, crenulate, slightly eiliate; *disc* villous.

Dendrobium amœnum.—*Wallich.*

Dendrobium aphyllum.—*Roxb. MSS.*

Descr.—*Flowering stems* entirely leafless, very slender, and slightly elouded with brown. *Flowers* of a delieate white, with obtuse segments, eaeh of which is beautifully tinged at its apex with violet. *Lip* eucullate, marked internally towards the base with grecnish-yellow.

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This elegant species of *Dendrobium* has recently flowered in the collection of George Barker, Esq., of Springfield, where our drawing was made. The flowers

exhale a most delightful, though by no means a powerful, fragrance. According to Dr. Wallich, it is found upon trees in Nepal, flowering in the months of April and May.

It requires a strong, humid heat, when growing; and, like others of this genus, should have a period of rest, by being removed into a cool, dry house, after forming its stems. It may be either potted in rough, sandy peat, mixed with drainers, or grown in baskets suspended from the roof of the house. The plant from which our drawing was made, was trained to grow erect, before it was known that its stems are naturally pendulous.

Fig. 1, portion of a flower, showing the connexion of the lip with the lower sepals: 2, pollen-masses; 3 and 4, anther case.

# ON THE AQUEOUS EMANATION, OR EXHALATION OF VASCULAR VEGETABLES.*

(*Continued from page* 91.)

The state of the atmosphere appears also to exercise an influence on this phenomenon; the facts altogether tend to prove that plants exhale more in a dry than in a humid air, and probably more in a rarified than in a condensed one; but I am not aware of any proofs at all precise on this subject; nor do I know more especially in what exact degree we can distinguish from these facts, what belongs to the deperdition or to the exhalation.

Independently of exterior causes; the age of the parts of vegetables destined for exhalation, influences considerably the intensity of this function: thus, in an equal light and temperature, leaves exhale more in spring than in summer, and more in summer than in autumn. Guettard has observed that in winter the exhalation of evergreen trees is extremely feeble: according to him a laurel exhales during two days of summer, as much as during two months in winter.

Senebier has made a great number of experiments, in order to determine the relation which exists between the quantity of water absorbed and the quantity exhaled in a given time. To effect this, he steeped a branch in water, the weight of which he knew; he introduced the extremity of the branch into a spacious receiver; weighed the water which was found in the receiver at the termination of some hours, and compared its quantity with that which was deficient in the vessel from which the branch absorbed its nourishment. These experiments left always something to desire, because of the water which remained in suspension in the receiver, or which was deposited on the leaves; they offered also some variations with respect to the surfaces of the branch, and the leaves, and in the intensity of the light, &c. The result of a number of trials tends to prove, that the water absorbed is, to the water exhaled, as three is to two, or in other terms, that one third of the water absorbed remains in the plant, and that the two other thirds exhale in the air.

The same physiologist has also sought to compare the nature of the water exhaled, with that of the water absorbed by the plants. He steeped some branches in infusion of cochineal; the colour of the injection penetrated even to the summit of the plant, but the water exhaled was perfectly transparent. Having steeped some branches in water, mixed with a little sulphuric or muriatic acid, the water exhaled has been sometimes perfectly pure; sometimes it has presented some traces of the acids; which may be attributed to the disorganization which resulted from its progress. Hales and Duhamel have remarked that the liquids exhaled by the vine, the apple, the peach, rhubarb, parsnip, and even by rue and cabbage, do not offer any difference of taste, and only differ from common water, in having a slight colour, which might have been communicated while in

the receiver with the plant. Duhamel observes, however, that these exhaled waters corrupt sooner than the common water; and Senebier is assured from analysis, that in fact the water exhaled by vegetables is not perfectly pure. Having placed different plants in a vessel, and collected the water which they exhaled, he found in it a portion foreign to the water: in 11.520 parts of the water exhaled by the vine, he detected 1.25000 of foreign matter. This analysed, appeared to contain a little gummy and a little resinous matter, and the residue, which was neither soluble in water or alcohol, was supposed to be a mixture of lime, and sulphate of lime. Thus not only one third of the water absorbed by the plant remains in its tissue, but nearly the whole of the substances dissolved in the absorbed water, do not escape with the water exhaled, but remain in the vegetable.

We here perceive, in a manner sufficiently clear, one of the sources of nutrition. The water absorbed by the roots, arrives charged with the substances dissolved in it; it deposits them in the vegetable, and a portion of the water itself remains with these substances, the rest escapes in the form of water, and nearly in the same state of purity as distilled water.

Hedwig has compared this evacuation of water to the evacuation of the excrements of animals, and it is in this sense that he says, plants have their liquid excrements. Hales has compared this phenomenon to the insensible perspiration of animals, with which, indeed, exhalation has evident relations, particularly as to the nature of the substance exhaled, and to the manner of exhalation. Both the opinions of Hedwig and Hales appear to me correct, and if I were inclined to pursue the comparison of the two kingdoms, I should willingly admit that the exhalation of vegetables, represents at the same time the evacuation of the excrements, and that of the insensible perspiration of animals. It is for this reason that I designate it by a specific name.

The connexion with this last function is still perceptible in another point of view; thus, it happens sometimes, that the transpiration of vegetables, when it is very abundant in a given place, becomes visible like perspiration in the form of small drops. It is thus, that drops of water are frequently observed, which are formed on the summit of the leaves of corn, and of many other graminaceous plants on receiving the first rays of the sun. These small drops are also perceived on the serratures of certain plants; they are arranged with regularity on the leaves of the monk's-hood. It was thought formerly that these small drops of water, very visible at sunrise, were deposited there by the dew; but Mussenbroeck was the first to ascertain, that they were found also on plants which were sheltered from it, and that they must be attributed to the action of the living vegetable. Must these facts be attributed to exhalation? Must this water be considered as a true excretion, or rather as the water which exudes from the extremity of the leaves of certain arums, or from the summit of the spathes of the palms—or should they be considered similar to the exuding of the tears of the vine? It would be useful to institute some new observations on this subject.

# ON THE PROGRESS AND PRINCIPLES OF ORNAMENTAL GARDENING.

(*Continued from page* 75.)

In order to introduce harmoniously a geometrical flower-garden, I have, in addition to the sunk fence which separates the back lawn from the open park, raised a low wall, thus forming a strongly marked *line* of considerable length as the base of further geometrical operations; I propose marking it at regular distances by vases or some such ornaments, in order to conduct the imagination another step towards symmetrical arrangement; and having by this simple expedient prepared the eye by a few regular forms, we may proceed with a geometrical plan for the flower-garden, without shaking the principles of harmony which form the basis even of the most uncultivated taste. Without some such a preparation as the *line* described, a formal flower-garden in the midst of lawns and shrubberies of a landscape character would have the most harsh and discordant effect—and without perhaps knowing exactly why, most people would pronounce it to be in bad taste. Having given some general idea of the manner in which I would manage the distant plantations, the approach, the disposition of water, the front lawns, and a geometrical flower-garden at the back, in a place of the dimensions supposed, I will, to prevent repetition, reserve what I have to say upon other subjects connected with such a residence, for my observations upon grounds surrounding a house of some architectural pretension, where they will form more necessary appendages.

Let us then now suppose a handsome house in the Grecian, Gothic, or Italian style of architecture; Italian, for instance, as perhaps more felicitously adapted to receive aid from architectural effect in gardening than any other. It does not suit the space allotted to an article of this description to enter into architectural detail, which is moreover to a certain extent foreign to the subject, but I would recommend that modification of the Italian style which Mr. Barry has introduced in his improvements at Trentham Hall. It possesses all the floridness of style which characterises the great Italian villas, with a much purer taste in the decorative accessories.

To begin at the beginning, I will commence with the entrance lodges, which should be of the same style of architecture as the house, but simpler in character—every entrance might be sufficiently varied to give a degree of individuality to each, but they should all partake of the same style to a certain extent; in fact should in my opinion, in order to give that impression of singleness of purpose which would add dignity to the domain, be sufficiently similar to appear the conception of one mind; at all events of one period. It is by far too common to run riot in architectural vagaries at the present day, and in no instance perhaps is this abuse of knowledge carried to greater excesses than in park lodges. I

could name a park, and there are many in a similar predicament, entered at one point beneath a Gothic gateway, at another between Grecian temples of miniature dimensions, at the next a Swiss cottage forms the lodge, farther on an Egyptian tomb is the sombre entrance, and at another point its place is taken by a Hindoo pagoda—this is a sort of playing at architecture, which makes us almost regret that its history and progress were ever studied—for any simple style arising out of purpose and circumstances, would be preferable to this jumble of distant and unconnected periods and styles. My experience suggests little more to me on the subject of lodges, except that they should, when possessing an architectural character, be supported by a line of wall to some distance, to which they should form an appropriate terminus. The effect of lodges of any architectural pretension without this support would be spotty and bad, the masses being too small for an isolated position; a mere rustic lodge might derive sufficient support from a shrubbery-paling or a mere cropped hedge; but lodges of the character described must be supported by a line of well-finished wall, which might be terminated if desirable at some distance from the lodge, and another description of fence substituted. Extreme simplicity should always govern the design of entrance lodges, even bordering on severity; and too great luxuriance, even of natural beauties should, if they exist, be subdued by art, so that the approach to the house should at every turn increase in attraction—for a falling off after the entrance would produce a very unsatisfactory effect; to prevent which, I would not allow any flower-garden or ornamental shrubs round the lodges, or at all events if a little flower-garden was thought desirable for the inhabitants of the lodges, it should be at the back, screened by shrubbery or some other object. As this rejection of flowers about an entrance to a park may be considered by some rather harsh, I will suggest to those who are anxious for their introduction, a manner of introducing them with the least possible injury to the general impression I wish to convey. I would not on any account allow patchy flower-beds to be distributed about so as to form detached objects; but merely dig a border not exceeding two feet wide close round the building, in which large showy flowers might be planted, those of the tallest growth on either side of the door, or creepers to climb over the portico or any ornamental frame-work with which the door happened to be decorated. But this arrangement is rather too fanciful, and I would prefer sowing the border quite full either of mignonette or sweet-peas, which would have the advantage of greater simplicity of design, and at the same time diffuse an agreeable odour, and thus create a pleasing sensation on entering the gates. Either plan would have the advantage of making the flowers group with the lodge, and not form detached features.

(*To be continued.*)

## TROPÆOLUM TUBEROSUM.

BY D. CAMERON, A.L.S.

Amongst many hundred plants growing in the Birmingham Botanic Garden from tubers planted in April, a very distinct variety has appeared, of which there are only four plants; they are much weaker plants than the others, with considerably smaller leaves, but what makes them of most value is that they are covered with a profusion of flowers, while all the other plants around them do not even show flower-buds. If they retain their present habits, they will be most desirable plants for ornamenting the flower-garden.

## BOTANICAL NOTICES OF NEW PLANTS.

### DICOTYLEDONES.

#### BERBERIDEÆ.

Epimedium Musschianum. Morren et Decaisne. White-flowered Barren Wort. *Bot. Mag.* t. 3745. This is a delicate species of Epimedium, bearing pale yellowish flowers. It was received at the Edinburgh Botanic Garden, from Mr. Young of Epsom, in the year 1838; and it flowered in the greenhouse of that establishment, for the first time, in March 1839. It will probably bear the open ground, and is a native of Japan. *Bot. Mag.*

#### LEGUMINOSÆ.

Bauhinia Forficata. Link Forcipated Bauhinia. *Bot. Mag.* t. 3741. This is a fine species, and appears to be a plant of straggling growth; and bearing numerous white spreading flowers, whose petals are narrowly lanceolate. It is in the stove of the Glasgow Botanic Garden, and flowered for the first time in 1837. It is a native of Brazil, and appears to have been first introduced into Europe by the Prince de Nieuwied, who sent seeds of it to the Royal Garden of Berlin. *Bot. Mag.*

Inga Harrisii. Lindl. Mr. Harris's Inga. *Bot. Reg.* N. S. t. 41. This is certainly a beautiful species, bearing long and beautiful crimson stamens, and tipped with bright yellow anthers. It is a native of Mexico, and was imported by Thomas Harris, Esq. of Kingsbury, a most zealous collector of rare plants, in compliment to whom Dr. Lindley has named it. Dr. Lindley states that it is distinct from all hitherto-published species approaching *I. canescens* in character; but it has much larger leaves, shorter peduncles, and smaller flowers. The crimson silken tassels of the stamens are very graceful and pretty.

The drawing was made in Mr. Harris's collection in February last.

Like many Mexican plants, this species grows best in a house where the temperature is a little higher than in the common greenhouse. It delights in a rich fresh soil, which may be found with a mixture of loam peat and sand. The best time to strike cuttings, is when the plant begins to grow vigorously. *Bot. Reg.*

Gompholobium Versicolor. Lindl. Changeable Gompholobium. *Bot. Reg.* N. S. t. 43. This is a handsome species, bearing numerous large reddish-brown flowers. It is a native of the Swan River, and was introduced by R. Mangles, Esq., of Sunning Hill, from whose plant the drawing was made.

It appears to be allied to *G. sparsum* of Allan Cuningham, which was found by that zealous collector and botanist in King George's Sound. It agrees with the above species in its dark flowers and short petioles, but its branches are much more angular; the leaves are distinctly rising on the upper side, and those near the bottom of the branches are much shorter and broader than the others. *G. versicolor* differs from *G. tenue* in its short petioles, and racemose dark flowers; and from *G. sparsum* in the leaflets not being at all veiny, and all of equal sizes.

It strikes readily from cuttings taken either in autumn or spring. The soil most congenial for its growth, is peat and sand, and about one fourth of good loam. If the young plant is tipped, it will send out lateral shoots, and will form a handsome bust.

POLYGONEÆ.

Polygonum amplexicaule. Don. Stem-clasping Polygonum. *Bot. Reg.* N. S. t. 46. This is a showy Polygonum, bearing spikes of reddish-crimson flowers about six inches long. It is a native of Nipal, where it appears to be common. It is, in consequence of describing from dried specimens, under various names, *P. speciosum*, *ambiguum*, *oxyphyllum*, and *petiolatum*. The seeds from which this plant was raised, were received by the Horticultural Society of London from Dr. Falconer, the superintendant of the Botanical Garden of Saharunpur. No varieties, Dr. Lindley observes, were seen amongst the seedlings, and it is probable that the differences which have been observed among the dried specimens, were produced by local causes. It grows to the height of about four feet, and is a hardy perennial, and flowers in July and August. It should be treated as an amphibious plant, so that its root may reach the water; and is, therefore, well adapted for planting on the margins of pools and lakes.

It may be increased by division, or by seeds. *Bot. Reg.*

ERICINEÆ.

Clethra Tomentosa. Lam. Downy Clethra. *Bot. Mag.* t. 3745. This is a small handsome shrub, which bears racemes of white and fragrant flowers in the end of autumn. Dr. Graham doubts whether it is distinct from *C. alnifolia*; but he is certain that it is the true plant of American authors. *C. alnifolia* appears to Dr. Graham only to differ in the total absence of down, *C. tomentosa* having the under surface of the leaves and young branches hoary. *C. alnifolia* inhabits the middle and northern states of America; *C. tomentosa* the southern; and was sent to the gardens of this country, by the late Mr. Drummond, from New Orleans. *Bot. Mag.*

SCROPHULARINEÆ.

Gesnera Marchii. Wailes. Mr. March's Gesnera. *Bot. Mag.* t. 3744. This is said to be a very handsome and distinct species of Gesnera, bearing

reddish-pink flowers, and of erect habit. It is a native of the Organ Mountains of Brazil; and was sent from thence by George March, Esq., to his friend Mr. Wailes of Newcastle, in compliment of whom it has been named by Mr. Wailes.

This Gesnera was accompanied by a great number of Epiphytes, and about thirty bulbs of *Amaryllideæ*. It flowers in October. *Bot. Mag.*

ARISTOLOCHIACEÆ.

Heterotropa Asaroides. Morr. et Decaisn. Asarabacca-like Heterotropa. *Bot. Mag.* t. 3746. This is a very singular and rare plant, and was brought to Europe by M. Von Siebold from Japan; and the Edinburgh Botanic Garden is indebted for the specimen here figured, to Mr. Young of the Epsom Nursery. It blossoms in the greenhouses towards the end of February, and continues in flower for several days in great perfection.

It is separated from the genus *Asarum*, on account of the arrangement of the stamens, the structure of the anthers, and also because of the nearly superior position of the ovary. *Bot. Mag.*

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MONOCOTYLEDONES.

ORCHIDACEÆ § EPIDENDREÆ.

Cattleya Citrina. Lindl. Yellow-flowered Cattleya. *Bot. Mag.* t. 3742. This is certainly a very distinct and singular Cattleya. A native of Oaxaca, Mexico, from which place R. Smith, Esq., sent pseudo-bulbs to the collection at Woburn Abbey, in the year 1828; and in whose collection it flowered in April, 1839. The bulbs and foliage are remarkable for their very glaucous hue. The flower of this species is very different from any that we have hitherto seen, being of one colour, and that a bright gold; if the plate we now refer to be correct in its colouring. Sir W. J. Hooker states that its size, form, and colour, is so much like that of *Tulipa sylvestris*, that he was for a moment deceived by it. The flowers are scentless. The plant is of easy growth, and is a valuable addition to our stoves. It does not appear to have been known to European botanists, except in a dried state; but in Mexico its beauty seems to have attracted the attention of the natives. *Bot. Mag.*

We are glad to have the pleasure of recording a notice of this species. We have watched it in the collection of George Barker, Esq., of Springfield near Birmingham, for the last eighteen months; hoping every time we visited it to see that it had made some progress towards flowering, but without success; and, we believe, at this time it shows no signs of inflorescence.

§ VANDEÆ.

Oncidium Pulvinatum. Lindl. Cushion Oncidium. *Bot. Reg.* N. S. t. 42. This is a very tall spreading Oncidium, bearing a panicle eight or nine feet long; and in its disposition, colour, structure, and size of the flower, approaches near to *O. divaricatum*. It however differs from that species in its lip, having the middle lobe the largest, not the smallest; in the cushion at its base being much more

villous, and equally convex, not divided into equal quarters. The lateral lobes of the lip are also crisp in this species, and not plain as in *O. divaricatum*.

It is a native of Rio Janeiro, whence it was sent to Mr. Richard Harrison of Aighburg, in the year 1834, by his brother, Mr. William Harrison. It requires different treatment from the others. *Bot. Reg.*

Burlingtonia Maculata. Lindl. Spotted Burlingtonia. *Bot. Reg.* N. S. t. 44. This is a sweet-scented Epiphyte obtained from Brazil, by Messrs. Loddiges, with whom it flowered in May, 1838. Its flowers are yellow spotted with cinnamon colour, and the labellum is stated to be white at the base. The horns, on each side the apex of the column, are of a crimson colour.

This species is said to decide the point of the propriety of the separation of *Burlingtonia* from *Rodriguezia*. *Bot. Reg.*

## CALENDAR OF GARDENING OPERATIONS FOR SEPTEMBER.

Early in the month finish shifting greenhouse-plants.

Frequently reset greenhouse-plants placed out of doors, to prevent their getting rooted in the ground: otherwise they will receive a check upon being placed in the houses for the winter, which should be done sometime from the beginning to the end of the month, according to the state of the weather.

Camellias that have been placed out of doors should be housed early in the month, otherwise many of their leaves will get yellow and unsightly.

Chrysanthemums, where there is convenience of early vineries or cold pits, should also be housed early in the month, so as to retain their foliage in good condition.

Saxifrages should now be re-potted in order to get good flowering plants for the next season.

Layers of hardy Ericas, that are rooted, should now be taken off and transplanted.

Attentively examine the capsules of Balsams for seed; as the capsules burst and disperse them as soon as they are ripe.

Pink Pipings should now be transplanted into store beds, or flowering beds, according to the strength of the plants.

Dahlias will require much care this month in staking and tying up. The flowers should also be shaded from the sun when fine flowers are wanted.

Layers of Carnations, Picotees, and Cloves, should now be taken off and planted into pots.

Sow Californian and other annuals, that are hardy enough to endure our winter, for early planting next season; also collect seeds of annuals and other plants as they ripen.

Put in cuttings of such Ericas and Epacrises as are most difficult to root, choosing cuttings of fine wood, and they will be rooted by next spring.

# DAHLIA SCAPIGERA.

(*Scape-bearing Dahlia.*)

LINNEAN SYSTEM.
SYNGENESIA SUPERFLUA.

No. 118.

NATURAL ORDER.
COMPOSITÆ—ASTEROIDEÆ.

## GENERIC CHARACTER.

Dahlia. (Cav.) *Capitulum* radiatum, floribus *radii* ligulatis fœmineis neutrisve, *disci* tubulosis 5-dentatis. *Involucrum* duplex, exterius squamis foliaceis 1-serialibus circiter 5 patulis reflexisve, interius, squamis 12-16 subbiserialibus longis apice membranaceis basi crassiusculis et inter se coalitis. *Receptaculum* planum palcaceum, paleis membranaceis oblongis indivisis. *Styli* rami erecti aut subincurvi crassi extùs piliferi. *Antheræ* ecaudatæ appendiculatæ. *Achænium* oblongo-obovatum obcompressum epapposum apice obsoletè bicorne. — Herbæ *Mexicanæ* grandes. *Folia* opposita pinnati-partita rariùs bipinnati-partita, segmentis ovatis acutis serratis. *Radices* fasciculatæ, aliis cylindricis, aliis oblongo-tuberculatis. *Rami* apice elongati nudi 1-cephali. *Capitula* versicolora, disco nempè luteo, radio purpureo roseo albo aut flavo.—*De Cand.*

*Head* radiated, flowers of the ray ligulate, female, or neuter, those of the disk tubular 5-toothed. *Involucre* double, exterior one of about 5 leafy scales in a single series, spreading or reflexed; the interior one consisting of from 12 to 16 scales arranged rather in two series, long, membranaceous at the apex, a little thickened at the base, and united with each other. *Receptacle* flat, chaffy, scales membranaceous, oblong, undivided. *Branches* of the style erect or somewhat incurved, thick, externally hairy. *Anthers* ecaudate, appendiculate. *Seed* oblong-obovate, obcompressed, without pappus, obsoletely 2-horned at the apex.—Fine *Mexican* plants. *Leaves* opposite, divided in a pinnate, more rarely in a bipinnate manner, segments ovate, acute, serrated. *Roots* fasciculate, some cylindrical, others oblong-tuberculate. *Branches* elongated at the apex, naked, 1-headed. *Heads* various in colour; namely, with a yellow disc, and purple, rose, white, or yellow rays.

## SPECIFIC CHARACTER.

D. scapigera; *caule* glabriusculo striato; *foliis* pinnati-partitis; *segmentis* ovatis dentatis basi inæqualibus; *ligulis* fœmineis fertilibus; *pedunculis* gracilibus longissimis.

*Stem* rather glabrous, striated; *leaves* divided in a pinnate manner; *segments* ovate, toothed, unequal at the base; *florets* of the ray furnished with styles, fertile; *peduncles*, slender, very long.

Georgina scapigera.—*Link et Otto.*

Descr.—*Plant* about two feet high, of slender habit, throwing up numerous stems, for the most destitute of pubescence. *Leaves* variable in form; the lower ones having the terminal segment ovate, while in the upper ones it is generally long, narrow, and linear. *Peduncles* very long, slender, glabrous, sometimes standing singly, more frequently in pairs, but generally in

threes, placed collaterally, and bearing occasionally one or two distant bractes. *Flowers* about two inches or more in diameter, with a yellow disc, and a ray of the purest white. *Florets* of the ray lanceolate, somewhat acute, with two, and occasionally three minute teeth at the apex. *External involucre* rather spreading, not reflexed.

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Of the favourite genus Dahlia, only three species have, till lately, been known to botanists, the first of which was introduced about the year 1789. A new species of Dahlia, therefore, is a novelty, which, although it may be inferior in beauty to our well-known favourites, cannot be viewed without some degree of interest. In all probability, however, it will improve by cultivation, like its predecessors; which, when first introduced, were single, and not superior in beauty to our present plant, although of much larger size. In its slender and dwarf habit it resembles another new species, *Dahlia Barkeriæ*, of which we gave a character with a brief description in Vol. II. of the Floral Cabinet, fol. 28, and of which we purpose giving a figure in an early Number.

The recorded species of Dahlia, therefore, are only five in number: viz. *D. variabilis*, *D. Cervantesii*, *D. coccinea*, *D. Barkeriæ*, and *D. scapigera*. Although we have adopted the specific name of the latter, we are by no means satisfied with the correctness of the term *scapigera*, scape-bearing; the flower-stalks being, according to correct botanical language, peduncles, not scapes, the latter term being applied to such flower-stalks as arise from the root and do not bear leaves. A more appropriate specific name would have been *diversifolia*, in allusion to the variable form of the leaves. It is in the collection of the Birmingham Botanical and Horticultural Society, by whom it was received from the Royal Garden at Berlin.

The beautiful varieties of Dahlia obtained from the three original species, are almost innumerable; upwards of 1500 were named in a catalogue published some years ago; at this time they probably exceed 2000.

The generic name *Dahlia*, was given by Cavanilles in honour of Dahl, a botanist of considerable celebrity.

Fig. 1, floret of the disc, showing the *rami* of the style, hairy externally, and somewhat incurved; 2, the same cut open, showing the attachment of the filaments to the tube of the corolla; 3, the achœnium, or seed, with the style and incurved rami.

# POTENTILLA HÆMATOCHROUS, *Lehm.*

(*Blood-coloured Potentilla.*)

LINNEAN SYSTEM.
POLYANDRIA POLYGYNIA.

No. 119.

NATURAL ORDER.
ROSACEÆ.

## GENERIC CHARACTER.

Potentilla (Nest.) *Calycis* tubus concavus. *Limbus* 4-5 fidus extus 4-5 bracteolatus. *Petala* 4-5. *Stamina* innumerabilia. *Carpella* innumerabilia stylo lateral donata, in receptaculo procumbenti persistente ex succo capitato. *Semen* appensum. *Herbæ* aut suffrutices. *Foliis* compositis, stipulis petiolo adnatis. *Floribus* albis luteis rariter rubris.—(*Decand. Prod.* vol. ii. p. 571.)

The tube of the calyx concave. *Limb* divided into 4 or 5 parts, and having externally 4 or 5 bracteolæ. *Petals* 4-5. *Stamens* innumerable. *Carpels* innumerable, furnished with a lateral style, lying in the persistent, juiceless, capitate receptacle. *Seed* pendulous. *Herbaceous* plants, and shrubs. *Leaves* compound, stipules joined to the petiole. *Flowers* white, yellow, rarely red.

## SPECIFIC CHARACTER.

P. hæmatochrous; *Cæspitosa*, molliter subvelutina; *radice* crassâ lignosâ; *caulibus* adscendentibus erectisve; *foliis* septenato—ternato-digitatis, radicalibus petiolatis; *caulinis* in stipulis subsessilibus; *foliolis* elliptico-oblongis, obtusis, basi paululùm attenuatis ambitu ferè toto crenato-dentato, nervo venisque primariis subtùs prominentibus; *petalis* emarginatis obscurè fusco-rubris, quam lacinæ calycinæ ovatæ acuminatæ longioribus; receptaculo piloso; *carpellis* compresso-ovoideis lævibus.—*Shlectendahl in Linnea*, *Lehm.*, Ind. Sem. h. Hamb. 1836.

*Cæspitose* soft, and somewhat velvety; *root* thick and woody; *stems* ascending or erect; *leaves* septenate or ternate-digitate, radical ones petiolate; *stem-leaves* somewhat sessile in the stipules; *leaflets* elliptical, oblong, obtuse, a little attenuated at the base, having almost the whole of the circumference crenately notched, and also having the nerve and first veins prominent underneath; *petals* notched, of an obscurely brown red colour, longer than the ovate acuminate divisions of the calyx; receptacle hairy; *carpels* ovoid, compressed, smooth.

Potentilla hæmatochrous—*Lehm.*, Ind. Sem. Hamb. 1836, et Linnea, 1839.

Descr.—*Root* thick, tortuous, black, simple, (and stated in the Linnea to have been seen six inches in length, and abrupt at the apex). The plant is covered with short, somewhat appressed hairs, of a yellowish hoary appearance, which renders it soft and velvety to the touch. *Petioles* and *calyces* somewhat villous, but the hairs are more spreading. *Stems* from 8 to 24 inches or more in height, erect, or ascending, and with few leaves. *Petioles* of the leaves 2-3, and sometimes 4 inches long. *Leaflets* large, from 1 to $3\frac{1}{2}$ inches long, and from 6 to 9 lines broad; *apex* obtuse, margin deeply and somewhat obtusely toothed, having the terminal tooth the smallest. *Stem-leaves* small, and placed on a short petiole joined with the stipules, which are obliquely ovate, acuminate, and generally entire. *Flowers* from 2 to 20 on each stem, and

of the usual size, divisions of the calyx ovate, acuminate, 3 to 4 lines long, alternating with the bracteolæ, beneath which they are much narrower and smaller. *Petals* longer than the calyx, and of a brownish-red colour. *Receptacle* covered with white hairs. *Fruit* ovoid, somewhat compressed, and marked with an elevated line on the dorsal side; on the ventral side it is almost keeled, somewhat obtuse under the apex, and slightly notched.

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This very distinct herbaceous species is a native of Mexico, where it was found by Scheide and Ehrenberg. Our drawing was made from a fine plant now growing in the gardens of the Birmingham Botanical and Horticultural Society, to which establishment it was presented by the curator of the Berlin Garden, in the year 1838. It will probably require frame protection during the winter: at least, so it has been treated in the Birmingham garden, with great advantage. It is, therefore, evident, that it would soon become perfectly hardy, though at present the plants are much too scarce to risk many of them in the experiment. One, however, was turned out into the open border in May, where it is now growing about two feet high. It flowers in July and August, and may be increased by divisions, or by seeds. The soil should be loam and peat.

The generic name, from *potens* "powerful," has been adopted in consequence of the powerful virtues supposed to be contained in the tribe. The specific name *hæmatochrous*, is derived from αιμα—τος, "blood," and χροα, "colour."

# CHEIRANTHUS OCHROLEUCUS.

(*Pale yellow Wall-flower.*)

LINNEAN SYSTEM.
TETRADYNAMIA SILIQUOSA.

No. 120.

NATURAL ORDER.
CRUCIFERÆ.

GENERIC CHARACTER.

Cheiranthus (Brown.) *Siliqua* teres aut compressa. *Stigma* bilobum aut capitatum. *Calyx* basi bisaccatus. *Semina* 1-serialia ovata compressa (o=). (*Decand. Prod.* vol. i. p. 135.)

*Siliqua* round or compressed. *Stigma* two-lobed or capitate. *Calyx* bisaccate at the base. *Seeds* arranged in one row, ovate, compressed. *Cotyledons* accumbent.

SPECIFIC CHARACTER.

C. ochroleucus. *Suffruticosus* adpressis pilis vestitus; *foliis* linearibus; *floribus* ochroleucis capitatis brevitèr pedicellatis; *petalis* subrotundis, unguibus longissimis; *stigmate* bilobato.

*Suffruticose*, clothed with appressed hairs; *leaves* linear; *flowers* of a pale yellow colour, capitate, shortly pedicellate; *petals* roundish, entire, claws very long; *stigma* two-lobed.

Deser.—Suffruticose. *Stem* angular, about twelve inches high, covered with closely appressed white hairs. *Leaves* numerous, linear, entire, scattered, of a palish-green colour, covered over with the same kind of pubescence as the stem. *Flowers* shortly pedicellate, arranged in a head. *Petals* of a pale yellow colour, roundish, delicately veined, longly clawed. *Stamens* four long and two shorter, all smooth and flat, the longer ones the length of the claws of the petals. *Calyx* half an inch long, tipped with brown. *Anthers* two-celled, dehiscing lengthwise. *Ovarium* four-sided, which, together with the style and stigma, is the length of the longer stamens. *Style* short. *Stigma* two-lobed.

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This is a very delicate and sweet-scented species, now growing in the gardens of the Birmingham Botanical and Horticultural Society; where it was raised from Russian seeds received through the late Mr. Hunneman, in the year 1836. Mr. Cameron, the curator of the above establishment, believes that it was sent under the name of *Cheirinia sessiliflora;* but the tally has been lost, and therefore it is doubtful under what name it was introduced. It is, however, certain that it is not a *Cheirinia*—which genus is considered as synonymous with *Erisymum*—for the cotyledons are accumbent, and not incumbent, as they are in *Erisymum*. It has been published, we believe, in this country, under the name of *Cheiranthus tenuifolius* by L'Héritier; but if we may judge from the detailed character of this plant in De Candolle's systema, it is certainly very different from ours. In the present species, the stem is certainly not round and slender, but angular and stiff;

and the leaves, instead of being only an inch in length, measure at least three inches. We might mention several other points of difference, but these we think are sufficient to establish a material distinction between the plants in question.

To find out under what name it came, has been fruitless; and therefore, we have given the above name, *Ochroleucus*. It is perfectly hardy, will thrive in any garden soil, and flowers freely in June and July. From its dwarf habit, soft yellow flowers, and delicate scent, it may be considered quite an addition to the borders of an ornamental garden. It can be easily increased, either by cuttings in the usual way, or by seeds.

The generic name is said to be derived from *kheyry*, its Arabic title, and *ανθος* a flower; its specific name *Ochroleucus* relates to the colour of the blossoms.

# STANHOPEA MACULOSA.

(*Spotted Stanhopea.*)

LINNEAN SYSTEM.
GYNANDRIA MONANDRIA.

No. 121.

NATURAL ORDER.
ORCHIDACEÆ § VANDEÆ.

## GENERIC CHARACTER.

Stanhopea. (Hooker.) *Peranthium* membranaceum, patentissimum vel reflexum. *Sepala* libera, subundulata, mole suâ ruentia. *Petala* conformia angustiora. *Labellum* liberum, anticum, ecalcaratum, carnosum, utrinque cornutum; dimidio superiore (*epichilio*) convexo, inferiore (*hypochilio*) excavato. *Columna* longissima, petaloideo-marginata. *Anthera* 2-locularis. *Pollinia* 2, elongata, fissa, caudiculâ quàm glandula biloba stipitata breviore. *Epiphytæ pseudobulbosæ*. *Folia* plicata. *Scapi* radicales, vaginati, pauciflori. *Flores* maximi magis minusve maculati.

*Perianth* membranaceous, widely spread open, or reflexed. *Sepals* free, somewhat undulate, pendent from their own weight. *Petals* similar in form, narrower. *Lip* free, placed anteriorly, spurless, fleshy, horned on each side, the upper half (*epichilium*) convex, the lower half (*hypochilium*) excavated. *Column* very long, with a petal-like margin. *Anther* 2-celled. *Pollen-masses* 2, elongated, cleft, with a *caudicula* shorter than the 2-lobed stipitate gland. *Pseudobulbous epiphytes*. *Leaves* plaited. *Scapes* radical, sheathed, few-flowered. *Flowers* very large, more or less spotted.

## SPECIFIC CHARACTER.

S. Maculosa; *hypochilio* rotundato saccato intùs verrucis glandulosis anticè obsito; *metachilio* brevi constricto cornua 2 falcata porrecta gerenti; *epichilio* oblongo obtuse 3-dentato apice subreflexo.

*Hypochilium* rounded, saccate, the anterior portion studded internally with glandular warts; *metachilium* short, constricted, bearing 2 falcate, projecting horns; *epichilium* oblong, obtusely 3-toothed, somewhat reflexed at the apex.

Descr.—*Pseudobulbs* pyriform, furrowed, somewhat curved, each bearing a leaf at the apex, and invested at the base with ovate-acuminate membranous sheaths. *Leaves* lanceolate, strongly veined, with a long, furrowed petiole. *Scape* pendulous, few-flowered, invested with sheathing membraneous braetes, which, as well as the ovaria, are covered with minute elevated dots. *Sepals* and *petals* of a pale brownish-buff, tinged towards the base with crimson, and marked with numerous rich dark-red blotches. *Lateral sepals* large, oblong, somewhat rounded, concrete to some extent at the base. *Upper sepal* distinct ovate-oblong, obtuse. *Petals* narrow, linear-lanceolate, acute, reflexed at the apex. *Lip* nearly sessile, the lower portion (*hypochilium*) rounded, hollow, extending beneath the *metachilium*, its inner surface thickly studded anteriorly with glandular warts, arranged in a radiated manner, and exhaling a powerful and most agreeable odour, posteriorly smooth, with a large red blotch on each side; the middle portion (*metachilium*) short, contracted, from each side of which is given off a fleshy, incurved, pointed horn, grooved

externally, and extending to the extremity of the lip; the anterior portion (*epichilium*) oblong, rounded at the base, obtusely 3-toothed, and somewhat reflexed at the apex. *Column* the length of the lip, both of which are minutely and delicately spotted. *Pollen-masses* and *gland* like those of the other species.

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This handsome species of *Stanhopea* is in the collection of George Barker, Esq., of Springfield, by whom it was imported. It resembles, in several points, *S. tigrina*, figured by Mr. Bateman in his splendid "Orchid. Mex. et Guatem." and by Dr. Lindley, in the Botanical Register. It differs, however, from that species in the much smaller size of the flowers, in its general markings, in the warty (not lamellated) inner-surface of the *hypochilium*, and, judging from the plates above-mentioned, in the broader apex and more obtuse teeth of the *epichilium*. The inner surface of the *hypochilium*, although not broken up into *lamellæ*, has the warts arranged in a radiated manner, in which respect it may be said to approach *S. tigrina*; this radiated structure, however, is not peculiar to these species, it being equally evident in *S. insignis*.

Fig. 1, interior view of hypochilium; 2, epichilium, terminating in three teeth.

## ON THE PROGRESS AND PRINCIPLES OF ORNAMENTAL GARDENING.

(*Continued from page* 108.)

The approach should be so managed as not to allow the spectator to view a very large portion of the grounds at once; and this should be done by conducting the drive through plantations, so arranged as to make it appear necessary for the road to pass through them; for nothing has a more formal and artificial effect than planting an obvious screen on either side of the road just where required, or, what is still worse, planting a regular belt along the road for the greater part of the distance. The water should be advantageously seen once or twice from the approach, and the road should eventually lead to the lateral extremity of one of the wings of the mansion where the principal entrance should be constructed in such a way as to allow a carriage to drive beneath and set down under cover. The main advantage, however, of having the entrance here, would be the leaving the ground in front and at the back perfectly private. I would have the house so placed that the ground should slope down gradually from the front to a considerable distance. This would enable me to construct a wide terrace or esplanade in front of the house, which never fails to produce a magnificence of effect unattainable by other means. A space to an extent of at least forty feet from the house should be gravel, accurately levelled, which might be ornamented with pedestals supporting groups of statuary; but in our climate I would confine myself to two or three marble basins symmetrically placed, from the centre of which should rise handsome marble *tazze* of at least six feet diameter, each of which should throw up a jet of water, which falling back into the *tazza* and spreading itself over the moulded border in thin sheets as it fell to the basin below, would produce one of the best effects that can be obtained from fountains. Beyond the gravel I would have a stripe of turf from twenty-five to thirty feet deep, and then a flagged terrace-walk about twelve feet broad, guarded by a balustrade of a design in accordance with the architecture of the main building.

From this terrace the most beautiful views of the grounds should be obtained at different points, but not seen all at once; it should terminate at each end with a bold flight of marble or stone stairs leading to a lower portion of the grounds, where the turf to a distance of five or six hundred feet from the base of the terrace should be kept continually mown, and this space should terminate with a wide gravel-walk running parallel with the flagged terrace-walk, and be like it guarded by an open balustrade, but of a bolder and more rustic character. Massive groups of ornamental shrubs should be arranged at the foot of the steps from the upper terrace, whose tufted heads rising above the balustrade, occasionally diversified by a forked cypress or towering poplar, would produce a good

pictorial effect from the windows of the house. At these points, too, plantations should commence diverging right and left till arriving at the line of the lower terrace-walk, which would consequently be much longer than the upper one. A fine artificial perspective would be thus produced. The space of turf left open in the centre should be sparingly diversified with a few groups of luxuriant ornamental shrubs, kept in sufficient order to produce the effect of careful cultivation but not formality.

The lake is supposed to sweep up against the wall of the lower terrace, which I would make to terminate at each end with a pavilion, of bold design, from which on one side a flight of steps should conduct to the lake, where a handsome landing-place should be constructed ; and on the other, to a walk at first by the side of the lake, but diverging to that portion of the grounds most carefully laid out in the landscape and romantic character. At the foot of the stairs of the lower terrace, the *architectural* features should terminate, as I consider those proposed sufficient to frame the building and harmonise its features with the surrounding scenery.

Having descended the stairs from the lower terrace to the walk at the side of the lake, it will finish the arrangement for this part of the grounds before returning to the house. First, then, the exterior portion of the plantations occasionally approaching and bordering the lake should, particularly near the base of the lower terrace, possess an admixture of handsome evergreen shrubs, and present a general effect of cultivation sufficient to harmonise it with the finest of the ground above ; this feature, however, should gradually disappear as the terraces are left at a greater distance, and eventually nature should apparently be left to itself. Following the path by the side of the lake, I would soon make it plunge into the depths of the plantations, which in their interior should assume as much wildness of character as possible, and the path should be carried through the most rugged parts, occasionally passing through the spur of an abrupt hill by a tunnel, or be carried over a chasm by a viaduct, with its line of tall and slender arches, but constructed of stone of a dark colour so as not to make a patch in the scenery. Part of the Birmingham railway is a cutting through an immense stratum of red sandstone, the blastings of which are left untrimmed, and the passage through this rugged avenue of rock has in English travelling a novel and beautiful effect. If the grounds of our imaginary villa contained a similar formation near the surface, a chasm might be formed in the same way, and it might be traversed above as that of the Birmingham railway is, by a single skew arch. The skew principle in such a situation gives a degree of wildness to the beauty of the architecture, well in keeping with its rocky abutment, from which the arch should spring at once, as in the instance I am quoting, and to which it should appear cemented, as it were, by a bold and simple moulding ; and the arch being of the same stone as the rock, would produce a beautiful mingling of art and nature most agreeable to the eye.

Suppose the situation to possess the advantage of such a substratum of stone, a fine piece of what is commonly called "rock-work" might be formed by excavating and blasting, which, when partially covered by beautiful creeping plants allowed to run nearly wild, would produce a far different effect to the pottering and unmeaning piles of heterogeneous materials studded over with sea-shells, spars, bones, and other matter, usually the component parts of a piece of "rock-work." Rock-work of this description is so unnatural, that it must, to a cultivated taste, be absolutely distasteful and disgusting. In some parts of the country masses of rock are natural features, which have been taken the greatest advantage of in forming a rocky scene such as I have recommended; and I could mention more than one place in the neighbourhood of Tunbridge Wells and at the Undercliff in the Isle of Wight, where beautiful effects have been produced with their aid. But in places where none such exist, I would follow the mode adopted at the Botanic Garden at Manchester, where is one of the best managed imitations I have seen, and of which I extract a short account from a journal kept during a recent visit to that place. "Here is also a rocky walk, which is one of the best imitations of a natural scene that I have yet met with: the stones, all of the same description, which is absolutely necessary to give unity and a probability of effect, are piled together in the most natural manner, and here and there cemented with invisible stucco, so as to form large solid masses, such as could not have been removed entire; for all the stone was brought from a distance of forty miles. The whole has been allowed to become partially covered, just as accident willed, by ivy, and other creeping plants, and the effect now produced is that of a romantic rocky valley, very like wild nature itself. A stream is also managed on one side; but they have not been able to get slope enough to give the current sufficient activity to make it attractive." Such is the style of rock-work I would recommend, and which, remedying the defect alluded to, might be adopted in the present instance; and I conclude this portion of the subject with a protest against the piles of heterogeneous rubbish usually called rock-work.

Returning for a brief space, we must proceed to the back of the house, where I will suggest a few ideas upon the situation of the flower-garden. In this instance I would not, as in the former one of a place on a smaller scale, contract the arrangements by a low wall or any such feature; on the contrary, I would let the lawns and shrubberies sweep away to a considerable distance in undulating and irregular variety, relieved occasionally, near the house, by a few masses of large showy flowers, planted in front of the trees, but on no account in detached patches. To the right and left, near the house, I would, connected with the main building, construct an ornamental arch of stone or stucco, either of a highly wrought character, and finished with statuary, or, of a more rustic style, to be partially covered with ornamental creepers. A straight walk through a well-trimmed shrubbery should conduct on one side to the flower-garden, and on the other to the conservatories, &c. &c.; and the preparatory features of the arch, and straight-

cropped walk, would prepare the eye for the geometrical figures of the one, and the semi-architectural effects of the other, while the surrounding shrubberies would screen them from the rest of the grounds and prevent their destroying the general character. The domes of the conservatories might, however, if ornamentally finished and gilded, be allowed to be seen peeping above the trees from certain points of view, and would, with the lower parts concealed, form good distant objects. Having so far exceeded my originally intended limits, I must now conclude abruptly, recommending "Repton's Landscape Gardening," as a most excellent work for such as wish to enter more deeply and scientifically into the subject.

## BOTANICAL NOTICES OF NEW PLANTS.

### DICOTYLEDONES.

#### BERBERIDEÆ.

Epimedium violaceum. Morren et Decaisne. Purple Barrenwort. *Bot. Mag.* t. 3751. This species, which is rendered handsome by its profusion of delicate pink flowers, was imported into Europe from Japan by M. Von Siebold. It blossomed very freely in an open border in the Nursery Establishment of Mr. Cunningham, of Comely Bank, Edinburgh, in the beginning of April, 1839. The plant continues to flower for a considerable time, but whether it is hardy or half-hardy is not stated. *Bot. Mag.*

#### OXALIDEÆ.

Oxalis Barrelieri. Jacq. Barrelier's Oxalis. *Bot. Mag.* t. 3748. This is a suffrnticose plant about 12 inches high, of no great beauty, and bearing a head of yellow flowers on long peduncles. It was received from Messrs. Booth, of Hamburgh, at the Glasgow Botanic Garden. It differs in some slight degree from the description which is given by Jacquin, as in the length of the stamens and styles, and also in the colour of the flowers, which are yellow, instead of a whitish flesh colour; but Sir W. J. Hooker is convinced that it is identical with *O. polymorpha* of Zuccarini, for, having compared it with authentic specimens of that author, received from the Berlin Herbarium, the observations which he was thus enabled to make proved it to be the same plant. It requires the heat of the stove, and flowers in March and April. *Bot. Mag.*

#### LEGUMINOSÆ, § CASSIEÆ.

Bauhinia corymbosa. Roxb. Corymb-flowering Bauhinia. *Bot. Reg.* N. S. t. 47. This is a very showy and delicate species, bearing a profusion of pink flowers. It is a native of China, and has long been introduced into this country; all attempts to flower it had, however, proved unsuccessful, until September 1838, when it blossomed in Mr. Wells's greenhouse at Redleaf. Specimens were sent by him to Dr. Lindley for publication. It is stated that the Chinese drawings of this plant, which are in the collection of the Horticultural Society,

represent it as completely covered with flowers, when it must indeed have a most showy and beautiful appearance. As it is now beginning to mature its fruit, it may be considered that the plant will bear blossoms in greater abundance in a future season.

Dr. Roxburgh describes this plant as being a very delicate species; it has scarcely anything, he says, that deserves the name of stem, but its many slender branchlets and branches climb and spread in every direction to an extent of many fathoms, running over high trees.

It succeeds best in a house where the temperature is something below that of a damp stove. The soil in which it is potted should be fresh and rich, and composed of a mixture of loam, peat, and decayed manure; it should be planted out in the border, where convenient, or, if otherwise, should be allowed plenty of pot-room. It may be propagated by layers and cuttings. *Bot. Reg.*

Chorozema varium. Lindl. Various-leaved Chorozema. *Bot. Reg.* t. 49. This is another and a beautiful addition to our knowledge of the Flora of the Swan River. It was introduced by Mr. Smart, in the year 1837, and seeds were presented by him to the Horticultural Society, in whose garden it was raised. Two or three varieties were produced, one of which was almost destitute of the spiny toothing, but not different in any other respect. It has only been observed in Mr. Drummond's collections from that country, and even in that herbarium occurs only in small fragments, with pods adhering to them. It may therefore be considered a plant of great rarity.

Mr. Fortune, to whose care its management was intrusted in the garden of the London Horticultural Society, has furnished Dr. Lindley with the following observations on its culture:—He states, "that in the autumn of 1837, the seed of this beautiful plant was sown in light soil, and placed in a frame nearly exhausted. It soon vegetated, and was potted in fresh soil, composed of about one-third of loam and sand, and two-thirds of peat. It was afterwards placed in a cool pit, and regularly shifted into a larger pot, as it seemed to require it. Under this treatment it grew freely, and was covered with its beautiful flowers for several months in the early part of the present year.

The only essential point in its cultivation is, that it must always have plenty of air, and not too much water, otherwise it is apt to damp off at its neck soon after flowering. It is easily propagated by cuttings. *Bot. Reg.*

Zichya tricolor. Lindl. Three-coloured Zichya. *Bot. Reg.* t. 52. This is a handsome climbing shrub, having the appearance of the Kennedyas, from which it has been separated by Baron Hügel. From its graceful twining habit, it is very well adapted for the ornamental greenhouse. The drawing was made from a plant sent to Dr. Lindley by Mr. Young, of the Milford Nursery. There are only seven species, all of which are natives of the Swan River. It may be increased by seeds or cuttings in the usual way. This species requires to be in a cold pit or greenhouse during the winter, where the temperature is kept just above freezing,

and air admitted every fine day. Artificial heat is injurious, because it causes them to begin to grow at a season when the sun has but little power on the vegetation. *Bot. Reg.*

BIGNONIACEÆ.

Tourrettia lappacea. Willd. Bur-fruited Tourrettia. *Bot. Mag.* t. 3749. This plant is the only species of the genus at present known, and is more remarkable from the curious structure than for the beauty of the flowers. The calyx before expansion is of a bright vermilion colour; when it becomes fully expanded it is green. The corolla resembles that of a Pedicularis deprived of its lower lip. The germen is clothed with deflexed, red tubercles, and is succeeded by a pretty large membranous inflated capsule, clothed with long but softish prickles, strongly hooked at the extremity.

It is an annual and a native of Peru, and was found there by Dombey. By him it was introduced into the Paris Royal Garden, but was afterwards lost to Europe. In 1837, J. M'Lean, Esq. sent it from Lima to the Glasgow Botanic Garden. It requires a greenhouse, where it will flower in the autumnal months, and until the winter destroys it. *Bot. Mag.*

PASSIFLORACEÆ.

Passiflora hispidula. (*sp. nov.*) Foliis membranaceis hispidulis trilobatis ciliatis basi cordato-sinuatis subdentati apiculatis; lobis subæqualibus obtusis apiculatis; petiolis hispidis infrà medium biglandulosis; pedicellis geminis brevissimis 2-3 bracteatis; ovario elliptico glabro.

Flowers in pairs, small, about an inch in diameter. Pedicels very short, with 2 or more generally 3 filiform, hispid, scattered bracteas. Involucre none. Calyx 10-lobed, with a very short tube; exterior lobes somewhat fleshy towards the base, externally of a pale green, internally of a yellowish white; inner alternate lobes small, membranous, and of a yellowish white. Crown arranged in three series; the outer one consisting of filiform spreading rays spotted with purple; the middle one formed of an erect, undivided purple membrane, closely and regularly plaited, with a crenate inflexed margin, and thus presenting the appearance of a series of hooded processes; the inner one consisting of a simple membrane, purple, erect, whence it spreads over, and forms a lining to the bottom of the calyx, and terminates by uniting with the base of the shaft.

This new species of *Passiflora* is exceedingly pretty, though the flowers are small. It was raised at the Birmingham Botanic Garden from seeds presented to that establishment by George Barker, Esq., by whom they were imported.

LOBELIACEÆ.

Lobelia multiflora. (*sp. nov.*) Caule erecto herbaceo basi ramoso; foliis ovato-oblongis subacuminatis hispidulis obsoletè dentato-glandulosis ciliatis sessilibus; spicâ elongatâ terminali multiflorâ foliatâ.

Calyx hispid, segments linear-awl-shaped, erect; tube of the corolla slit on the upper side, limb 2-lipped, upper lip with 2 narrow linear segments, lower

3-lobed, lobes narrow, lanceolate. Filaments membranous, united into an angular tube; anthers of a dusky blue, bearded at the apex, more especially the inferior one. Style the length of the filaments; stigma somewhat globose, surrounded by a ring of hairs, 2-lobed, expanding at length into 2 spreading lamellæ. Ovarium 2-celled, many-seeded.

This distinct species of *Lobelia* is in the collection of the Birmingham Botanical and Horticultural Society, who are indebted for it to Mr. Knight, of King's Road, Chelsea.

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## MONOCOTYLEDONES.

### ORCHIDACEÆ § VANDEÆ.

Coryanthes maculata, *var.* Parkeri. Hook. Mr. Parker's variety of Coryanthes. *Bot. Mag.* t. 3747. This variety differs merely in having the labellum marked with purple. It appears from the specimen figured to be a handsome variety. It is a native of Demerara, and was imported by C. S. Parker, Esq. *Bot. Mag.*

Oncidium? concolor. Hook. One-coloured Oncidium. *Bot. Mag.* t. 3752. This is certainly a very beautiful plant, bearing a raceme of brilliant yellow flowers. It is a native of the Organ Mountains of Brazil, where it was found by Mr. Gardner, in the year 1837, and sent by him to the Woburn collection, the property of the Duke of Bedford. Sir W. J. Hooker is doubtful whether it be an Oncidium or not, and states that in some respects it agrees with Miltonia, though it differs from that genus, which has an entire lip. *Bot. Mag.*

Odontoglossum Rossii. Ross's Odontoglossum. *Bot. Reg.* N. S. t. 48. This is a pretty species, though, according to Dr. Lindley, inferior in beauty to several which have been discovered before. We may hope, however, that other species of this beautiful genus will soon be added to our collections, as Mr. Hartweg is now actively engaged in exploring Oaxaca, a country which may be regarded as the head-quarters of the tribe, and from which we shall probably derive many rich and beautiful varieties. The flowers of some of the plants in this genus, besides being remarkable for their colouring, frequently attain a considerable size. Indeed, the *Odontoglossum nebulosum* produces flowers which are as much as nine inches in circumference. The *O. Cervantesii* resembles *Rossii*, but the flowers are larger, and the colours more beautiful.

*O. Rossii* was found in Mexico by Mr. Barker's collector, Mr. Ross, after whom it has been named. The sepals are of a dark green colour, spotted with purple. The petals are white, marked also with purple. The labellum is white, having a yellow claw, and the contrast of the different colours produces rather a singular and beautiful appearance.

It requires to be cultivated in a warm damp stove, where it may either be potted in the usual way, or suspended from the roof on a piece of wood. It may be multiplied as plants of this tribe usually are. *Bot. Reg.*

## CALENDAR OF GARDENING OPERATIONS FOR OCTOBER.

Alpine plants requiring frame protection, should now be selected from amongst the others and fresh surfaced, divided if necessary, and placed in the frames towards the end of the month.

Many of the Alpines that are to remain out during the winter, will also require dividing; particularly those that are becoming strong, and are difficult to preserve, as without this precaution they often damp off in wet winters.

Divide also and transplant many herbaceous plants, particularly such as require fresh soil.

The greenhouse will now require to have abundance of air, both night and day.

Plants at this season should be sparingly watered, and when watered take care not to wet the leaves of the plants.

Chrysanthemums will now require much care in watering, staking, and tying. They should also be frequently turned, so that both sides may appear alike: they may be occasionally watered with liquid manure. Sometimes the leaves are attacked by a grub, which is nearly the colour of the leaves, and makes great havoc. The leaves, therefore, should be watched, and these insects carefully picked off. The flower-buds also at this season should be frequently examined.

Stove plants may be frequently syringed and steamed this month, and should have air daily, when the heat of the sun is such as to admit of doing so.

Bed out rooted Pansies for Spring flowering, also bed out pinks.

Pot carnations, piccotees, and cloves, layers two in a pot, and place them in a cool place for the winter.

Cover beds of Neapolitan violets with frames, those in pots ought also to be placed in frames for the winter.

Pot Queen and Brompton stocks for spring flowering, and place them under shelter.

Many evergreen shrubs may now be transplanted.

Dahlias ought to be taken up as soon as the leaves are cut by the frost, taking the soil carefully from the tubes, and storing them away perfectly dry.

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ERRATA AT PAGE 75.

*For* "in those—round the lawns large showy," &c. &c., *read,* "in those round the lawns; and large showy," &c. &c.

*For* "irregularly—the front of," &c. &c.,—*read,* "irregularly in front of," &c. &c.

*For* "in the front I," &c. &c.—*read,* "in the front of the house I," &c. &c.

# LUPINUS BARKERIÆ.

(*Mrs. Barker's Lupin.*)

LINNEAN SYSTEM.
MONADELPHIA DECANDRIA.

No. 122.

NATURAL ORDER.
LEGUMINOSÆ § PAPILIONACEÆ.

## GENERIC CHARACTER.

Lupinus. (Lin.) *Calyx* sæpè bracteolatus, profundè bilabiatus, *sepalis* in utroque labio plùs minùs coalitis. *Corolla* papilionacea; vexillo lateralibus reflexis; alis anticè infra medium externè foveolato-plicatis, posticè supernè conglutinatis; carinâ acuminatâ, genitalia includente; petalis ejus basi liberis. *Stamina* monadelpha, vaginâ integrâ; *antheris sepalis oppositis* oblongis præcocioribus; *petalis oppositis* subreniformibus serioribus. *Stigma* barbatum. *Legumen* coriaceum, ferè oblongum compressum, teretiusculum, torulosum, intus isthmis cellulosis interceptum. *Cotyledones* crassæ stomatibus ornatæ. *Agardh.* syn. Generis, Lup. p. vi.

*Calyx* frequently bracteolate, deeply two-lipped; *sepals* in each lip more or less joined. *Corolla* papilionaceous, having the standard reflexed at the sides; *wings* in the fore-part below the middle externally, enwrapping each other, in the upper part conglutinated behind; *keel* acuminated, concealing the organs of reproduction; its *petals* free at the base. *Stamens* monadelphous, sheath entire; *anthers* opposite to the sepals oblong, arriving earlier at maturity, those *opposite to the petals* somewhat reniform, and arriving later at maturity. *Stigma* bearded. *Legume* coriaceous, nearly oblong, compressed, roundish, beaded, intercepted inwardly by cellular divisions. *Cotyledons* thick, possessing stomata.

## SPECIFIC CHARACTER.

L. Barkeriæ; *fructieosus*, sericeus erectus; *foliis* longè petiolatis supernè subglabris, subtùs sericeis; *foliolis* 7—10 lineari lanceolatis basi attenuatis mucronulatis; *stipulis* petiolo adnatis subulatis pubescentibus; *floribus* purpureo-cæruleis, racemis elongatis; *calycibus* bracteatis, labio superiore-obsoletè dentato inferiore, acuto integerrimo; *pedunculis* calyce brevioribus.

*Shrub* covered with silky hairs, erect; *leaves* longly petiolate, upper surface smoothish, under surface silky; *leaflets* from 7 to 10, linear-lanceolate tapering into a base, mucronate; *stipules* joined to the petiole, subulate, pubescent; *flowers* purplish blue; *racemes* long; *calyces* bracteate upper lip of the calyx obscurely toothed, lower lip acute and entire; *peduncles* shorter than the calyx.

Lupinus Barkeriæ.

Descr.—*Shrub* about four feet high (the height it has made this season), branched, having the young branches closely covered with appressed hairs. *Leaves* petiolate, petioles twice as long as the leaflets, upper surface smoothish, under surface canescent, being covered with white, silky, closely-appressed hairs. *Leaflets* from 7 to 10, narrowly lanceolate, tapering at the base into a kind of petiolule, mucronate at the point. *Stipules* about five lines long, half of which length is joined to the petiole, the remainder subulate and pubescent. *Flowers* arranged in scattered whorls of about six in a whorl, of a purplish blue colour, peduncular. *Peduncles* shorter than

the calyx, about three lines long. *Bracts* very fugaceous, longer than the peduncles, and very canescent, and tipped with brown at the end. *Calyx* deeply divided, the upper part obscurely notched at the end, the lower part acute and entire. *Standard* orbicular, entire, and prominently keeled, the centre purple, the side blue; the wings blue, longer than the standard, obtuse, shortly unguiculate. *Keel* as long as the wings, acuminate, the upper side ciliate, the tapering portion of a dark purple. Filaments 10, united into one set shorter than the style, smooth. Anthers linear. *Pollen* very abundant, orange, composed of oblong smooth granules, having a transparent line in the centre. *Style* longer than the stamens, smooth. *Stigma* tufted with long white hairs. *Ovarium* compressed, covered with long white silky hairs. *Ovules* about 10, orbicular, compressed.

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This is certainly a very handsome species of Lupine, and was raised from seeds, which were imported from Mexico by G. Barker, Esq., by whom they were presented to the Birmingham Botanical and Horticultural Society in 1837. It approaches in many respects the *Lupinus Barkeri*, figured in the Botanical Register of last month; but from which it is distinct in being decidedly *shrubby*, whilst the former is stated to be *annual*.

Out of all the seeds presented, only one vegetated, which produced the present plant. It was preserved in the house during the winter, and planted out into the open ground in the summer of 1838. In that situation the plant showed spikes of flowers, but they were cut off by the frost without expanding. It was then taken out of the ground and placed in the frame the whole of the winter. This summer it was again planted out in the open ground, in which situation it has grown vigorously, and flowered freely. It may be increased by cuttings of the young wood plunged in a gentle heat.

Not being sufficiently hardy to stand the winter, it should, during that period, have frame protection. If planted out of doors, as before stated, it will be very ornamental, and continue flowering until prevented by the frost.

The generic name is said to be derived from λύκος, a wolf, in reference to its *devouring* the fertility of the soil in which it grows; but which must be regarded as a very doubtful explanation.

The specific name *Barkeriæ* we have given to this plant in compliment to Mrs. Barker, who devotes much attention to, and takes great interest in, the splendid collection at Springfield.

Fig. 1, germ invested by the monadelphous stamens; 2, germ, style, and stigma.

5 1 2 3 4

# OSBECKIA CANESCENS, *Meyer.*

(*Hoary Osbeckia.*)

LINNEAN SYSTEM.
OCTANDRIA MONOGYNIA.

No. 123.

NATURAL ORDER.
MELASTOMACEÆ.

## GENERIC CHARACTER.

Osbeckia. (Lin.) *Calycis* tubus ovatus sæpius setis stellatis, aut pube stellatâ vestitus; lobi 4-5 persistentes aut decidui; appendices inter lobos extùs ortæ formâ et magnitudine variæ. *Petala* 4-5. *Stamina* 8-10 filamentis glabris, antheris subæqualibus brevè rostratis connectivo basi brevè biauriculato. *Ovarium* apice setosum. *Capsula* 4-5 locularis. *Semina* cochleata. *Herbæ* aut sæpius suffrutices, Americani, Africani, aut Asiatici. *Folia* integerrima, 3-5 nervia. *Flores* terminales.—(*Decand. Prod.* vol. iii. p. 138.)

Tube of the calyx ovate, frequently clothed with starry bristles, or a starry pubescence, divided into 4-5 lobes, which are either persistent or deciduous, and having between the lobes externally appendages which vary in size and form. *Petals* 4-5. *Stamens* 8-10, *filaments* smooth, *anthers* somewhat equal, shortly beaked, and having the connective shortly two-eared at the base. *Ovarium* bristly at the apex. *Capsule* 4-5 celled. *Seeds* shell-shaped. *Herbaceous* plants, or frequently suffruticose ones, inhabitants of America, Africa, or Asia. The leaves are entire, from 3 to 5 nerved. *Flowers* terminal.

## SPECIFIC CHARACTER.

O. Canescens; *caulis* suffruticosus, quadrangularis; *foliis* decussatis subsessilibus ovatis 5-nerviis basi cordiformibus; *floribus* racemosi-paniculatis, petalis purpureis obcordatis emarginatis; *calycis* lobis persistentibus, appendicibus subulatis integerrimis; *connectivis* curvatis purpureis basi luteis.

*Stem* suffruticose and square; *leaves* decussate, somewhat sessile ovate 5-nerved heart-shaped at the base; *flowers* paniculately racemose; *petals* purple, inversely heart-shaped, notched at the end; *lobes* of the calyx persistent, appendages subulate entire; *connective* curved purple, yellow at the base.

Osbeckia canescens.—*Meyer.*

Descr.—*Stem* somewhat shrubby, square, unbranched, about two feet and a half high, covered thickly with a stellate pubescence, giving it a roughness which is very perceptible to the touch. *Leaves* ovate, heart-sharped at the base, opposite decussate, shortly petiolate and densely covered on each side with the same stellate pubescence which is found on the stem, prominently from 5 to 7 nerved. *Flowers* shortly pedunculate, large and showy, of a delicate and pleasing purple colour arranged in a paniculate raceme. *Bracts* large, pinkish, half the length of the calyx, pubescent, concave, half enclosing the alabastrum, very deciduous. *Petals* four inversely heart-shaped, notched at the end, of short duration. *Calyx* covered with a stellate pubescence, divided into four parts, each part regular ovate acuminate, persistent; alternate with the divisions

are found subulate appendages which are pubescent, similar to the other parts of the calyx. *Filaments* yellow, deciduous, 10, attached to an elevated rim situate at the base of the divisions of the calyx. *Connective* a little longer than the filaments, curved, bifid at the base, smooth of a bright purple colour tipped with yellow at the base. *Anthers* of a purplish blue, smooth, about half the length of the connective. *Pollen* whitish, minute, smooth, having a transparent line in the centre. *Style* twice as long as the stamens, and anthers, curved, pinkish, smooth. *Stigma* situate at the extreme apex, moist. *Ovarium* 5-sided, covered with a stellate pubescence, 5-celled. *Seeds* numerous, cochleate, attached to placentæ, arising from the centre of the ovarium, and situate in the centre of each valve.

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This is certainly a very handsome species, belonging to the second section of (*chætolepis*) Decandolle's *Prodromus*, to which division it makes a second species. The flowers have a very handsome appearance, and are more durable than some of the species, lasting about two days.

Our drawing was made from a plant in the collection of the Birmingham Botanical and Horticultural Society, and for which the Society is indebted to the Royal Botanic Garden, Berlin, from which establishment it was sent by Mr. Otto, in the year 1838.

It has been treated as a cold stove plant, but probably it may be suitable for planting out into the open ground during the summer. It flowers from August to September.

For its cultivation it requires to be potted in loam and peat. It may be increased by cuttings, which may be placed in bottom heat, and also by seeds, but as yet they have not ripened in the above establishment.

The generic name is given in honour of a Swedish clergyman and naturalist, Mr. P. Osbeck; the specific name *canescens* (the Latin participle, signifying hoary) has reference to the hoary appearance given by the stellate pubescence.

Fig. 1, calyx clothed with stellate pubescence; 2 and 3, stamens with their anthers and connectives; 4, germ, style, and stigma; 5, transverse section of seed-vessel.

# TRADESCANTIA SPICATA.

(*Spike-flowered Tradescantia.*)

LINNEAN SYSTEM.
HEXANDRIA—MONOGYNIA.

No. 124.

NATURAL ORDER.
COMMELINACEÆ.

GENERIC CHARACTER.

Tradescantia (Lin.) *Calyx* 3-phyllus æqualis, persistens. *Corolla* 3-petala, æqualis. *Stamina* filamentorum pilis articulatis. *Stylus* simplex. *Stigma* tubulosum. *Capsula* supera triloeularis. *Semina* pauea dorso vel latere embrionifera. *Herbæ* folia basi vaginantia, alterna, nervis parallelis.—*Bot. Reg.* t. 482.

*Calyx* 3-leaved, equal, persistent. *Corolla* 3-petalled, equal. *Stamens* having the hairs of the filaments artieulated. *Style* simple. *Stigma* tubulose. *Capsule* superior three-celled. *Seeds* few, bearing the embryo either on the back or the side. *Herbaceous* plants, leaves sheathing at the bases, alternate, with parallel veins.

SPECIFIC CHARACTER.

T. spieata ; *foliis* alternis lanceolatis aeuminatis, vaginantibus, vaginis ciliatis ; *floribus* spicatis axillaribus glomeratis ; *petalis* ovatis obtusis ealycibus pedunculisque villosis.

*Leaves* alternate, laneeolate, acuminate, sheathing, sheaths eiliate ; *flowers* arranged in spikes, axillary, glomerate ; *petals* ovate, obtuse, ealiees and peduncles villous.

Tradeseantia spieata.—Flor. Cab., vol. ii., p. 159.

Deser.—Perennial. *Stem* about two feet and a half high, enlarged at the joints. *Leaves* alternate, laneeolate, acuminate, sheathing, sheaths eiliate. *Flowers* of a purplish blue colour, axillary, numerous (12-15), situate within the sheaths of the leaves, and thus eausing the sheaths to have a gibbous appearanee. *Sepals* three, mueh smaller than the petals, obtuse, covered with villous hairs, edges scarious. *Petals* three times as large as the sepals, smooth, obtuse. *Peduncles* about an ineh long, villous. *Bracts* searious. *Stamens* six, situate around the base of the ovarium, and elothed with purple artieulated hairs. *Anthers* yellow, shorter than the style. *Style* smooth. *Stigma* obsoletely lobed. *Ovarium* densely eovered with soft villous white hairs, angular, three-eelled, and three-valved. *Seeds* one in eaeh cell, globular, smooth.

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This is a pretty species, but surpassed in beauty by many of those previously introduced, as *T. Virginica* for instance, which its flowers much resemble in colour ; but they are smaller and paler.

It is a native of Mexico, from which country it was imported by G. Barker, Esq., in 1837 ; and presented by him to the Birmingham Botanical and Horticultural Society, from a plant in which establishment our drawing was made. It

appears to have been hardy enough to have survived the winter of last year, at Mr. Barker's residence at Springfield; but it may be as well to treat it as a hardy frame plant, and to place it out in the open ground in May, where it will flower freely from September to October.

It requires no particular soil or attention. It may be increased by cutting off the young offsets at the root in the autumn.

The generic name, *Tradescantia*, is given in honour of Mr. John Tradescant, a distinguished traveller and naturalist in the reign of Charles the First, and to whom he was appointed gardener. Through the liberality of the nobility of that period he was enabled to form an extensive museum, an account of which he published under the name of *Museum Tradescantium*. At his death he bequeathed it to the University of Oxford.

The specific name *spicata* is given in reference to the disposition of the inflorescence.

Fig. 1, a stamen with its hairy filament; 2, magnified view of a grain of pollen; 3, The ovarium, style, and stigma; 4, Transverse section of the capsule; 5, magnified view of an articulated hair.

# PHAIUS ALBUS.

(*White-flowered Phaius.*)

LINNEAN SYSTEM.
GYNANDRIA MONANDRIA.

No. 125.

NATURAL ORDER.
ORCHIDACEÆ § EPIDENDREÆ.

GENERIC CHARACTER.

Phaius. (Loureir.) *Sepala* et petala subæqualia, patentia, libera. *Labellum* sæpiùs cucullatum, cum basi columnæ adnatum, calearatum, integrum vel trilobum, sæpiùs suprà carinatum lamellosum vel cristatum. *Columna* erecta, cum ovario continua, semiteres, marginata, elongata. *Anthera* 8-locularis. *Pollinia* 8, subæqualia.—*Herbæ* terrestres (Asiaticæ), caulescentes, vel acaules, foliis latis plicatis. *Scapi* radicales. *Flores* speciosi.

*Sepals* and petals somewhat equal, spreading, free. *Lip* most frequently hooded, adnate with the base of the column, spurred, entire or 3-lobed, more frequently keeled, lamellose or crested above. *Column* erect, continuous with the ovarium, semiterete, bordered, elongated. *Anther* 8-celled. *Pollen-masses* 8, somewhat equal.—*Terrestrial* (Asiatic) plants, caulescent or stemless, with broad plicate leaves. *Scapes* radical. *Flowers* handsome.

SPECIFIC CHARACTER.

P. albus; Caulescens, *foliis* oblongo-lanceolatis acutis subtùs glaucis; *sepalis* petalisque oblongo-lanceolatis acutis subæqualibus; *labello* oblongo cucullato denticulato apice rotundato; *disco* 5-cristato, calcare rectiusculo emarginato; *bracteis* cucullatis herbaceis persistentibus imbricatis floribus æqualibus.—(*Lindl.*)

Caulescent, *leaves* oblong-lanceolate, acute, glaucous beneath; *sepals* and petals oblong-lanceolate, acute, somewhat equal; *lip* oblong, cucullate, denticulate, with a rounded apex; *disc* 5-crested, spur rather straight, emarginate; *bracteas* hooded, herbaceous, persistent, imbricated, equal to the flowers.

Phaius albus—*Lindl.*, in Wallich Plant. As. Rar. vol. ii. t. 198.

Descr.—*Plant* from one and a half to two feet high. *Leaves* sheathing at the base, the upper ones largest. *Raceme* terminal, from 3 to 5 flowered, nodding. *Flowers* white, large, and handsome, the lip convolute or hooded, with a yellow disc, the limb richly marked with pink veins. *Bracteas* large, herbaceous, concave, oblong-lanceolate, in length almost equal to the flowers.

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This is a delicate and most elegant species of the genus *Phaius*, our drawing of which was made from a plant in the rich collection of George Barker, Esq., of Springfield, near Birmingham. It is a native of the East Indies, and appears to have been originally found by Dr. Wallich upon Mount Chandaghiry, in Nepal:

it was afterwards discovered in Silhet, by Francis de Silva, who was employed to collect plants for the Botanic Garden of Calcutta.

It requires a hot and moist stove when growing, but should be kept cool, and more dry when dormant. The soil should be rough sandy peat mixed with small potsherds.

It may be increased by division in the spring, just before it begins to grow.

The generic name *Phaius* is derived from φαιὸς, brown, the first-discovered species being of that colour. The specific name *albus* has reference to the *white* flowers. The dissection shows the column, at the base of which is the adnate labellum.

# ON THE CULTIVATION OF THE DIFFERENT SPECIES OF PHLOX.

BY DAVID CAMERON, A.L.S.

There are no cultivated herbaceous plants that are more showy than the different species of *Phlox*, some of which begin to flower early in the spring, others in summer, but the greater number of sorts in autumn. They thrive best in a light sandy soil, inclined to, or mixed with peat, and in a rather damp situation.

The *prostrate* and *dwarf* species flower in spring, and in the early part of the summer. To have them in perfection, they should be divided as soon as they have done flowering, and transplanted either singly or in beds, so that they may become strong plants for flowering in the ensuing spring. Those requiring this treatment are *P. subulata*, *setacea*, *stolonifera*, *verna*, *procumbens*, *florida*, *nivalis*, *divaricata*, *Canadensis*, *ovata*, and *Listoniana;* with the half-hardy *pilosa*, and *amœna*, which do best kept either in a frame or greenhouse during winter, and will flower finely if turned into the open border in May. The *P. glaberrima*, *suaveolens*, *Caroliniana*, and *reflexa*, should be propagated by young offsets from the sides of the plants as early as they can be obtained, which is generally in May or June. Such offsets may be planted either where they are to remain for flowering, or in a nursery bed to be transplanted in autumn. The other species of the genus may be propagated by offsets of the young shoots which have not flowered, and which should be taken off in September. These single plants of the tall kinds will, next season, send up fine panicles of flowers, and will altogether make a better appearance than if they had been left in large clumps: their foliage also will be strong and fresh, which will give them a more pleasing appearance than when the flower-stems are partly covered with dead and dying leaves, a frequent circumstance when grown in large patches. Many fine seedling varieties have of late years been produced from seeds, and will no doubt continue increasing, as they seed very freely; and when growing in a congenial soil, seedlings will often appear spontaneously from self-sown seeds.

*Botanic Garden, Edgbaston, near Birmingham.*

## ON THE LOVE OF FLOWERS.

The love of flowers seems a naturally implanted passion, without any alloy or debasing object as a motive; the cottage has its pink, its rose, its polyanthus; the villa its geranium, its dahlia, and its clematis: we cherish them in youth, we admire them in declining days; but, perhaps, it is the early flowers of spring that always bring with them the greatest degree of pleasure, and our affections seem immediately to expand at the sight of the first opening blossom under the sunny wall, or sheltered bank, however humble its race may be. In the long and sombre months of winter our love of nature, like the buds of vegetation, seems closed and torpid; but, like them, it unfolds and reanimates with the opening spring, and we welcome our long-lost associates with a cordiality that no other season can excite, as friends in a foreign clime. The violet of autumn is greeted with none of the love with which we hail the violet of the spring; it is unseasonable, perhaps it brings with it rather a thought of melancholy than of joy; we view it with curiosity, not affection: and thus the late is not like the opening rose.

It is not intrinsic beauty or splendour that so charms us, for the fair maids of Spring cannot compete with the grander matrons of the advanced year; they would be unheeded, and perhaps lost, in the rosy bowers of summer and of autumn; no, it is our first meeting with a long-lost friend, the reviving glow of a natural affection, that so warms us at this season: to maturity they give pleasure, as a harbinger of the renewal of life, a signal of awakening nature, or of a higher promise; to youth they are expanding beings, opening years, hilarity and joy; and the child let loose from the house, riots in the flowery mead, and is

"Monarch of all he surveys."

There is not a prettier emblem of Spring than an infant sporting in the sunny field, with its osier basket wreathed with butter-cups, orchises, and daisies. With summer flowers we seem to live as with our neighbours, in harmony and good-will; but spring flowers are cherished as private friendships.

The amusements and fancies of children, when connected with flowers, are always pleasing, being generally the conceptions of innocent minds, unbiassed by artifice or pretence; and their love of them seems to spring from a genuine feeling and admiration, a kind of sympathy with objects as fair as their own untainted minds: and I think that it is early flowers which constitute their first natural playthings; though summer presents a greater number and variety, they are not so fondly selected. We have our daisies strung and wreathed about our dress; our coronals of orchises and primroses; our cowslip balls, &c.; and one application of flowers at this season I have noticed, which, though perhaps it

is local, yet it has a remarkably pretty effect, forming for the time one of the gayest little shrubs that can be seen. A small branch or long spray of white-thorn, with all its spines uninjured, is selected; and on these its alternate thorns, a white and a blue violet, plucked from their stalks, are stuck upright in succession until the thorns are covered, and when placed in a flower-pot of moss, has perfectly the effect of a beautiful vernal flowering dwarf shrub, and as long as it remains fresh, is an object of surprise and delight.

No portion of creation has been resorted to by mankind with more success for the ornament and decoration of their labours, than the vegetable world. The rites, emblems, and mysteries of religion, national achievements, eccentric masks, and the capricious visions of fancy, have all been wrought by the hand of the sculptor, on the temple, the altar, or the tomb; but plants, their foliage, flowers, or fruits, as the most graceful, varied, and pleasing objects that meet our view, have been more universally the objects of design, and have supplied the most beautiful, and perhaps the earliest, embellishments of art. The pomegranate, the almond, and flowers, were selected, even in the Wilderness, by Divine appointment, to give form to the various sacred utensils; the rewards of merit, the wreath of the victor, were arboraceous; in later periods, the acanthus, the ivy, the lotus, the vine, the palm, and the oak, flourished under the chisel or in the loom of the artist; and in modern days, the vegetable world affords the most exclusive decorations of ingenuity and art.

The cultivation of flowers is, of all the amusements of mankind, the one to be selected and approved as the most innocent in itself, and most perfectly devoid of injury or annoyance to others; the employment is not only conducive to health and peace of mind, but probably more good-will has arisen, and friendships been founded, by the intercourse and communication connected with this pursuit, than from any other whatsoever. The pleasures, the ecstacies of the horticulturist are harmless and pure; a streak, a tint, a shade, becomes his triumph, which, though often obtained by chance, is secured alone by morning care, by evening caution, and the vigilance of days: an employ, which in its various grades, excludes neither the opulent nor the indigent, and, teeming with boundless variety, affords an unceasing excitement to emulation without contention or ill-will.

Employment and occupation were as much the design, as they are found to be essential to the happiness, of human life. We are not all constituted to soar in the higher regions of scientific research; our dispositions are various as our intellects. Horticulture was the first occupation instituted for man, and he cannot pursue a more innocent and harmless employ: we were given "every herb and every tree upon the face of the earth." For food or raiment, the immediate necessities of man, a very few of them are applicable; but we can collect them for amusement in admiration of their beauty.

Without this beauty, they would be no object of research; and man, who is exclusively sensible of its existence, can alone find pleasure in viewing it. The

mind that is delighted with such admiration, must be almost insensibly led to an attendant pleasure, the contemplation, the perception of Infinite Wisdom and Power, manifested in the adornment, splendour, and formation, of even the simplest flower of the field. I would not arrogate for man an exclusive right, or make him generally the sole consideration of the beneficence of Providence; but there are influences which his reason can alone perceive—incitements to good thoughts and worthy actions.

Flowers, in all ages, have been the representatives of innocence and purity. We decorate the bride, and strew her path with flowers; we present the undefiled blossoms as a similitude of her beauty and untainted mind, trusting that her destiny through life will be like theirs, grateful and pleasing to all. We scatter them over the shell, the bier, and the earth, when we consign our mortal blossoms to the dust, as emblems of transient joy, fading pleasures, and withered hopes; yet rest in sure and certain trust that each in due season will be renewed again. All the writers of antiquity make mention of their uses and application in Heathen and Pagan ceremonies, whether of the temple, the banquet, or the tomb—the rites, the pleasures, or the sorrows of man; and in concord with the usages of the period, the author of the "Book of Wisdom" says, "Let us crown ourselves with rose-buds and flowers before they wither." All orders of creation, "every form of creeping things, and abominable beasts," have been, perhaps, at one time or other, by some nation or sect, either the objects of direct worship, or emblems of an invisible sanctity; but though individuals of the vegetable world may have veiled the mysteries, and been rendered sacred to particular deities and purposes, yet in very few instances, we believe, were they made the representatives of a deified object, or been bowed down to with divine honours. The worship of the one true Being could never have been polluted by any symbol suggested by the open flowers and lily-work of the Temple.—*(Journal of a Naturalist.)*

## BOTANICAL NOTICES OF NEW PLANTS.

### DICOTYLEDONES.

NYMPHÆACEÆ. Dec. NELUMBIACEÆ. Lindl.

Nelumbium luteum. Decand. Yellow Nelumbium. *Bot. Mag.* t. 3753. This is a very showy and handsome aquatic, bearing yellowish flowers tipped with green, and which are about six inches in diameter, and is said to be the largest flower in North America, with the exception of *Magnolia macrophylla*. It is a native of North America, and is found in Pennsylvania, Kentucky, &c. It was flowered in the establishment of Mr. Sylvester, of Chorley, Lancashire, and was raised from seed which was given to that gentleman by Mr. Anderson of the Chelsea Gardens. It was flowered when the water was at a temperature of from

seventy to seventy-five degrees. It is stated to be in all probability sufficiently hardy to bear our winters if plunged in water sufficiently deep to protect it from the frost, and in the summer raised nearer to the surface.

The tubers of this plant, according to Mr. Nuttall, resemble those of the sweet-potato, and are connected by running roots, are when boiled as farinaceous and as agreeable as the potato, and are employed for food by the Osages, and other western Indians.

BALSAMINÆ.

Impatiens picta. (*Sp. nov.*) Annua? glabra; caulibus ramosis punctatis, foliis ovatis acuminatis serratis, serraturis mucronatus, floribus subcymosis, roseis; petalis lateralibus striatus in medio luteis notatis, calcare integro basi incurvo.

A very delicate and beautiful species, and perfectly distinct as far as we know from all that have been hitherto described. It is in the collection of the Birmingham Botanical and Horticultural Society, and was raised from seeds which were presented with many others, which appear to be equally interesting, to that establishment, by the Hon. the East India Company, through Professor Royle. We have had a drawing of it taken, which will appear in the next Number of the Cabinet.

ROSACEÆ, § AMYGDALEÆ. Dec.

Amygdalus incana. Pallas. Hoary-leaved Almond. *Bot. Reg.* N. S. 58. This is a pretty shrub of about the midling size, and bearing pink flowers similar to those of the genus. It is rare in collections, and inhabits the range of Caucasus on the open plains, near the foot of that promontory, near Teflis amongst the rocks. It is allied to *A. nana*, but from that species it is readily distinguished by having its leaves covered thickly with hoariness beneath. Decandolle, in his Prodromus, has omitted this plant, and Mr. Loudon, in his Arboretum Britannicum, makes it a variety of *A. nana:* however, Dr. Lindley states no two species can be more truly distinct than they are. *A. incana* has obovate leaves, which are coarsely serrated, hoary, beneath the calyx long and downy, and the petals short. *A. nana* has the leaves smooth on both sides, finely serrated, the calyx is smooth and short, and the petals long: such are stated to be the distinctions of the two species.

This plant is in the possession of the London Horticultural Society, through the kindness of Sir Oswald Moseley, Bart. It may be increased by budding and grafting in the usual way. *Bot. Reg.*

LEGUMINOSÆ, § PAPILIONACEÆ. Dec.

Lupinus Barkeri. Lindl. Mr. Barker's Lupine. *Bot. Reg.* N. S. t. 56. This is a very pretty species, a native of Mexico, and obtained from that country by George Barker, Esq., whose name it bears. It is stated by Dr. Lindley to

approach nearest to *L. elegans*, and *leptocarpus* of Mr. Bentham; but from these it seems to differ in having the flower-buds separated from each other even when young.

This species is half-hardy, and only annual, or at most biennial; and, like *Lupinus Hartwegia*, flowers from the end of June until cut off by the frost. *Bot. Reg.*

COMPOSITÆ, § SENECIONIDEÆ.

Burrielia gracilis. Decand. Slender Burrielia. *Bot. Mag.* t. 3758. This is a hardy annual of little beauty, bearing yellow flowers. It is a native of California, where it was discovered by the late Mr. Douglas. It is confounded in gardens with *Lasthenia Californica*, to which it bears much resemblance, but may readily be distinguished by its involucre, which in Lasthenia is formed of one row of scales combined into a cuplike form; in Burrielia the involucrum is not so combined, and the scales are sometimes in one row, and sometimes in two alternating with each other. It also presents further distinction on examination.

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## MONOCOTYLEDONES.

LILIACEÆ.

Daubenya fulva. Lindl. Tawny Daubenya. *Bot. Reg.* N. S. t. 53. This is a second species of this singular genus, and is figured from the garden of R. Blanchard, Esq., of East Hill, Wandsworth, in whose garden it was detected by Professor Royle. It was received from the Cape of Good Hope with other bulbs, but is supposed to be a native of the east coast of Africa or Madagascar. Its flowers are not brilliant, being of a brick-dust colour. *Bot. Reg.*

AMARYLLIDACEÆ, § AGAVEÆ.

Agave saponaria. Lindl. Soap Aloe. *Bot. Reg.* N. S. t. 55. This is a plant of no great beauty, and was described at length in Miscellaneous Notices of the Botanical Register, 141. It was discovered by Mr. Kleimer, and is stated by him to be used for the purposes of soap in Peru. Its country is however thought to be Mexico, and to be nearly the same as *Polianthis Mexicana* of Zuccarrini. However, Dr. Lindley without doubt says that it is an aloe, and a perennial, while the others are analogous to annuals. *Bot. Reg.*

ORCHIDEÆ, § EPIDENDREÆ.

Lælia albida. Bateman. White-flowered Lælia. *Bot. Reg.* N. S. t. 54. This beautiful white-flowered Lælia was originally sent to Dr. Lindley by John Bateman, Esq., and of which a notice was given by Dr. Lindley in the Miscellaneous Notices in the Bot. Reg. p. 4. Since that period it has been

received from Thomas Harris, Esq., of Kingsbury, and this species is a valuable addition to those already in cultivation, as its flowers are stated to be as sweet as a bed of Primroses, whose smell they much resemble. It was found by Count Karwinski near St. Pedro, in cool places. *Bot. Reg.*

§ VANDEÆ.

Oncidium trulliferum. Lindl. Trowel-shaped Oncidium. *Bot. Reg.* N. S. t. 57. Notwithstanding the great number of species which this genus contains, daily additions are being made. This is a native of Brazil, and was imported by Messrs. Loddiges, with whom it flowered in September 1838. It cannot be reckoned as equal to many of the other species which are known, but its structure is curious and singular. *Bot. Reg.*

Gongora fulva. Lindl. Tawny-flowered Gongora. *Bot. Reg.* N. S. t. 51. The drawing of this plant was taken from a specimen in the collection of Mr. Barker, in 1836, from whom we have the following description:—The leaves are very similar in form to the *Gongora maculata*, but are somewhat larger, and perhaps a little finer or thinner. The bulbs are deeply ribbed, and rather longer than those of *G. maculata*. The plant is highly fragrant, scenting the whole house; the odour resembles that of the violet perhaps more than any other flower.

Mr. Barker considers this species only as a variety of *G. maculata*. Dr. Lindley, however, is inclined to think it a distinct species, from the following appearances: the flowers are but half the size, they are also of a darker colour, the racemes are more contracted, and the lateral horns of the hypochilium are terminated with a round dilated head. *Bot. Reg.*

## CALENDAR OF GARDENING OPERATIONS FOR NOVEMBER.

Fires require to be kept up in the plant stoves according to the state of the weather: if the plants are infected by insects, fumigating or sulphuring should be adopted according to the kind of insects by which they are infected. The heat of the orchidaceous house should now be lowered, and have less humidity so as to allow the plants to have a season of rest.

Greenhouse plants should have plenty of air as long as the weather continues mild; if the month should prove very wet, fires should be lighted occasionally during the day to dry up the damp: it should be borne in mind that the fires should be lighted only in such weather as plenty of air can be given, or in frosty nights, otherwise it will occasion more harm than good.

Fires may be lighted in vineries to protect late crops of grapes from the damp.

Mushroom beds may now be made with success.

Sea-kale should now be covered with leaves, &c.

Radishes should now be sown in frames for spring use.

Hyacinths should now be potted for forcing, and Tulips and Crocuses should be planted in the open ground.

Form beds of Pansies for flowering next season.

Protect half-hardy Alpines in frames, and those which are tender and out of doors may be protected by placing around them twigs of broom, Hazel or Birch, at a little distance, so as to allow of a free circulating air; such protection is oftentimes more effectual than close covering, particularly to those plants which are soft-wooded, and are liable to damp off. The soil also around the protected plants should be kept loosened; as plants never suffer so much from frost where the soil is kept loosened, as they do in firm unstirred soil.

# ASTRAGALUS VIRGATUS.

(*Twiggy Astragalus.*)

LINNEAN SYSTEM.
DIADELPHIA DECANDRIA.

No. 126.

NATURAL ORDER.
LEGUMINOSÆ § LOTEÆ.

## GENERIC CHARACTER.

Astragalus (Lin.) *Calyx* 5-dentatus. *Corolla* carinâ obtusâ. *Stamina* diadelpha. *Legumen* biloculare aut semibiloeulare suturâ inferiore introflexâ. Herbæ aut suffrutices.—(*De Cand. Prod.* vol. ii. p. 281.)

*Calyx* divided into 5 parts. *Corolla* with an obtuse keel. *Stamens* in two sets. *Legume* either two-celled or half two-celled, having the inferior suture bent inwards. Herbaceous or suffruetieose plants.

## SPECIFIC CHARACTER.

A. virgatus; *erectus* suffruticosus subcanescens; *foliolis* subsexjugis lineari-lanceolatis acutis; *racemis* spicatis valdè elongatis; *floribus* inferioribus remotis; *leguminibus* oblongis triquetris calyce duplò longioribus.—(*De Cand.* ut sup. p. 285.)

*Stem* erect, suffrutieose, rather hoary; *leaflets* arranged in about six pairs, linear, lanceolate, acute; *flowers* arranged in a long spiked raceme, the lower flowers remote from the rest; *legume* oblong, three-sided, as long again as the calyx.

Astragalus virgatus.—*Pallas*, A. varius, De Cand., Astrag. No. 34.

Descr.—*Stem* about two feet high, branched, hoary, arising from numerous closely-appressed hairs. *Leaves* alternate, petiolate, containing about six pair of leaflets, terminating with an odd one. *Leaflets* linear, lanceolate, acute, which, together with the rachis and petiolules, are covered with a pubescence similar to what is found on the stem and branches, but not in such abundance. *Stipules* two, minute, acute, covered more or less with a blackish pubescence. *Peduncle* on which the flowers are arranged very long, sparingly canescent streaked. *Flowers* of a purple-rose colour, scattered, arranged in long spikes, and very shortly pedicellated. *Bracts* subulate, covered with a blackish pubescence, similar to what is found on the stipules. *Calyx* about 6 lines long, inflated, obscurely-ribbed, densely covered with a pubescence similar to the bracts, divided at the top into 5 subulate teeth, scarcely three lines long, two of which press on the vexillum, and three surround the keel; the two upper ones are distant from each other; the three lower ones somewhat connivent. *Vexillum* lanceolate, obtuse, pointed, margin recurved, delicately streaked, about nine lines long. *Wings* linear, obtuse, longer than the keel, and shorter than the vexillum, much paler, and not so delicately or distinctly streaked, as the vexillum. *Keel* obtuse, concealing the organs of reproduction. *Stamens* arranged in two sets, 9-1 as long as the style. *Pollen* orange-coloured, composed of spherical grains, having a transparent line in the centre. *Style* very long, smooth. *Stigma* linear, arranged at the back of the style. *Ovarium* about one-third as long as the style, pubescent, but more abundantly so along the ventral suture. *Ovules* (immature) smooth, angular, numerous.

This is a pretty species of *Astragalus*, and, although introduced into this country in 1806, it is by no means common in collections; nor, as far as we know, has it been ever published in any British botanical periodical.

It is a native of Siberia, and was raised from Russian seeds in 1838.

Like most of this genus, it seems difficult to preserve through the winter, and therefore ought to have frame protection, and be planted out in the open ground in May, where it will flower freely during the months of August and September. It may be increased by dividing.

The generic name, *Astragalus*, is derived from ἀστήρ, a star, and γάλα, milk: the specific, *virgatus*, alludes to its shrubby and twiggy habit.

# DAHLIA BARKERIÆ.

(*Miss Barker's Dahlia.*)

LINNEAN SYSTEM.
SYNGENESIA SUPERFLUA.

No. 127.

NATURAL ORDER.
COMPOSITÆ—ASTEROIDEÆ.

## GENERIC CHARACTER.

Dahlia (Cav.) *Capitulum* radiatum, floribus *radii* ligulatis fœmineis neutrisve, *disci* tubulosis 5-dentatis. *Involucrum* duplex, exterius squamis foliaceis 1-serialibus circiter 5 patulis reflexisve, interius squamis 12-16 subbiserialibus longis apice membranaceis basi crassiusculis et inter se coalitis. *Receptaculum* planum paleaceum, paleis membranaceis oblongis indivisis. *Styli* rami erecti aut subincurvi crassi extùs piliferi. *Antheræ* ecaudatæ appendiculatæ. *Achænium* oblongo-obovatum obcompressum epapposum apice obsolctè bicorne. — Herbæ *Mexicanæ* grandes. *Folia* opposita pinnati-partita rariùs bipinnati-partita, segmentis ovatis acutis serratis. *Radices* fasciculatæ, aliis cylindricis, aliis oblongo-tuberculatis. *Rami* apice elongati nudi 1-cephali. *Capitula* versicolora, disco nempè luteo, radio purpureo roseo albo aut flavo.—(*De Cand. Prod.* 5, p. 494.)

*Head* radiated, flowers of the *ray* ligulate, female, or neuter, those of the *disk* tubular, 5-toothed. *Involucre* double, exterior one of about 5 leafy scales in a single series, spreading or reflexed; the interior one consisting of from 12 to 16 scales arranged somewhat in a double series, long, membranaceous at the apex, a little thickened at the base, and united with each other. *Receptacle* flat, chaffy, scales membranaceous, oblong, undivided. Branches of the *style* erect or somewhat incurved, thick, externally hairy. *Anthers* ecaudate, appendiculate. *Seed* oblong-obovate, obcompressed, without pappus, obsoletely 2-horned at the apex.—Fine *Mexican* plants. *Leaves* opposite, divided in a pinnate, more rarely in a bipinnate manner, segments ovate, acute, serrated. *Roots* fasciculate, some cylindrical, others oblong-tuberculate. *Branches* elongated at the apex, naked, 1-headed. *Heads* various in colour; namely, with a yellow disk, and purple, rose, white, or yellow rays.

## SPECIFIC CHARACTER.

D. Barkeriæ; *caule* solido scabrido hirsutissimo ramosissimo; *foliis* hirsutis, *foliolis* ovatis inciso-dentatis basi inæqualibus; *floribus* subconniventibus, *pedunculis* gracilibus superne glabris, *ligulis* fœmineis fertilibus, *paleis* fusco striatis.

*Stem* solid, rather rough, exceedingly hairy, very much branched; *leaves* hairy, *leaflets* ovate, inciso-dentate, unequal at the base; *flowers* somewhat connivent, *peduncles* slender, glabrous in the upper part, *florets of the ray* female, fertile, *paleæ* marked with brown *striæ*.

Dahlia Barkeriæ, *Flor. Cab.* Vol. II. fol. 28.

Descr.—*Stem* roughish, remarkably hairy, and very much branched from the base, forming a compact bushy plant from 2 to 3 feet in height, and from 5 to 8 in circumference. *Leaves* consisting of from 2 to 3 pairs of ovate, inciso-dentate leaflets with a terminal one which is

considerably the largest; their under surface hairy, like the stems, their upper surface of a dark shining green, and slightly pubescent. *Flowers* numerous, somewhat connivent. *Peduncles* long, axillary, hairy except the upper portion, which is glabrous. *External involucre* in 5 rather small divisions, ovate, green, shining, recurved at the apex, furrowed, the furrows marked with brown lines; *scales of the internal involucre* 8, nearly twice the length of the external, ovate-oblong, obtuse, membranous, shining, diaphanous, green and fleshy at the base, and elegantly marked with brown longitudinal lines mostly in pairs. *Florets of the ray* 8, elliptic-lanceolate, with 1 or 2 slight notches at the apex, of a delicate lilac or lavender colour, with a few faint streaks of purple; the veins on the under side slightly pubescent. *Florets of the disk* tubular, 5-toothed, regular. *Paleæ* ovate, obtuse, with a pair of brown *striæ* at the apex. *Achænia* oblong-obovate, compressed, slightly pubescent at the angles.

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This delicate and interesting species of Dahlia was introduced from Mexico, in the spring of 1837, by George Barker, Esq., of Springfield, near Birmingham, in whose collection it flowered, for the first time in this country, in the autumn of the same year; at which time we named it, and subsequently gave a brief description of it in the second volume of the Floral Cabinet. But, like many of the *Mexican Compositæ*, it flowers so late in the season, that, before we could have a drawing made, it was cut off by the frost: such also was the case last year. This autumn, although a most ungenial season, we have been more fortunate; the plant having bloomed in great perfection. It appears to be a free flowerer, having put forth from 100 to 150 flower-buds, many of which even now (the middle of November) are fully expanded.

Cultivation.—This species appears to require the same treatment as the common Dahlia; and from its dwarf, bushy habit, is better adapted to the border than any of the varieties in general cultivation.

Fig. 1, Floret of the ray; 2, floret of the disk, with one of the *paleæ*; 3, germ, style, and stigma.

# IMPATIENS PICTA.

(*Painted Impatiens.*)

LINNEAN SYSTEM.
DIADELPHIA DECANDRIA.

No. 128.

NATURAL ORDER.
LEGUMINOSÆ § LOTEÆ, *Decand.*

GENERIC CHARACTER.

Impatiens (Riv.) *Antheræ* quinque, nempè 3 biloculares, 2 antè petalum superius 1 loculares. *Stigmata* 5 coalita. *Capsula* prismatico-teretiuscula clongata, valvis a basi ad apiccm extrorsùm revolutis. *Cotyledones* planiusculæ. *Pedunculi* axillares ramosi multiflori. *Capsulæ* glabræ. *Folia* alterna.—(*De Cand. Prod.* vol. i. p. 687.)

*Anthers* five, namely, three 2-celled, the two situate before the upper petal 1-celled. *Stigmas* five, joined together. *Capsules* prismatically roundish elongated valves, exteriorly revolute from the base to the apex. *Cotyledons* flattish. *Peduncles* axillary, branched, many-flowered. *Capsule* smooth. *Leaves* alternate.

SPECIFIC CHARACTER.

I. picta; *annua?* glabra, *caulibus* ramosis punctatis, *foliis* ovatis acuminatis serratis, serraturis mucronatis; *floribus* subeymosis roseis, *petalis* lateralibus striatis in medio luteo notatis; *calcare* integro basi incurvo.

*Annual?* smooth; *stems* branched, dotted; *leaves* ovate, acuminate, serrated, *serratures* mueronate; *flowers* somewhat eymose, rose-eoloured, *side petals* streaked, marked with yellow in the middle, *spur* entire, ineurved at the base.

Impatiens pieta.—Flor. Cab. No. 33, p. 141.

Descr.—*Annual?* *stem* smooth, branched, beautifully spotted with brown, about 18 inches high, somewhat angular, thickened at the joints, but particularly those near to the base. *Leaves* shortly petiolate, alternate, ovate, acuminate, smooth, strongly veined, obliquely crenate, crenules mucronate. *Flowers* of a delicate rose colour, pcduncnlate; *peduncles* about two inches long, smooth, and spotted similar to the stem; *pedicels* about an inch long. *Bracts* very small, fleshy, glandular at the apex. *Bracteolæ* cordate, acuminate, with a fleshy glandular apex similar to the bracts. *Petals* 5, the upper one arched, roundish, margin undulate without claw, entire, strongly keeled, the side petals four, over-wrapping each other, and beautifully striated, having in the centre a small yellow spot; the upper ones are obtuse, notched, the lower ones similarly notched, but more lengthened, and having the margin incurved about the centre. *Sepals* 5, of unequal size, those which alternate with the petals being the smaller, those which are opposite to the petals the larger; the lower sepal is entire, to which is affixed the bases of the petals, the base is elongated and incurved. *Stamens* 5, distinct at the base, somewhat irritable, united at the apex, but separable at the base. *Anthers* 5, arranged around

the stigma, dehiscing longitudinally. *Pollen* abundant, of a pale yellowish-white colour, oblong, and having in the centre a round transparent point. *Style* none. *Ovarium* (immature) smooth, one-celled, somewhat angular. *Seeds* numerous, smooth, roundish.

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As stated in a former number of this Magazine, the plant is in the collection of the Birmingham Botanical and Horticultural Society, and was raised from seeds which were presented to that establishment by the Hon. the East India Company through Dr. Royle.

It is certainly a very delicate and beautiful species, and is the more to be esteemed as it continues to flower for a considerable time. It is different from all the species we have hitherto seen described.

The structure of this order is not so clearly understood as that of some others. Decandolle, in his Prodromus, remarks, that there are only two sepals, and four petals, which is certainly at variance with what the true structure ought to be. Dr. Lindley states, in his Introduction to the Natural System of Botany, that, upon examination, it will be found that each side petal is divided to the base, and occupies the place of three stamens, and that each divided petal represents two distinct petals, and that the space between the side petals is the place of the abortive petal.

In this species the structure appears more clear, if not demonstrative. The sepals, as we have described them, are five, but exceedingly unequal, and the two smallest are very deciduous. Their position appears to be as follows. The two smallest alternate with the petals, and are very deciduous : the two largest are opposite to the petals, and the fifth is elongated into a spur of considerable size.

The side petals are two, but deeply divided, and evidently, as stated by Dr. Lindley, represent four petals; a fifth is developed at the top of an orbicular form. The quinary arrangement, therefore, in this species is tolerably clear.

The generic name, *Impatiens*, is given to it in consequence of the ovarium, from its extreme irritability, bursting from the bottom to the top on the slightest touch. The specific name, *picta*, refers to its beautifully-striated petals.

# ODONTOGLOSSUM ROSSII; *var.* ACUMINATUM.

(*Ross's Odontoglossum ; acuminate variety.*)

LINNEAN SYSTEM.
GYNANDRIA MONANDRIA.

No. 129.

NATURAL ORDER.
ORCHIDACEÆ § VANDEÆ.

## GENERIC CHARACTER.

Odontoglossum. (Humb. et Kunth.) *Perianthium* explanatum, æquale ; *sepalis petalisque* angustis acuminatis liberis. *Labellum* indivisum, ecalcaratum, unguiculatum ; *ungue* cum basi columnæ continuo ; *laminâ* patente basi cristatâ. *Columna* erecta, membranaceo-marginata, apice utrinque alata. *Anthera* bilocularis. *Pollinia* 2, solida, *caudiculâ* lineari, *glandulâ* hamatâ. Herbæ *epiphytæ*, pseudo-bulbiferæ. *Folia* plicata. *Scapus* terminalis, vaginatus. *Flores* speciosi.—(*Kunth.*)

*Perianth* explanate, equal; *sepals* and *petals* narrow, acuminate, free. *Lip* undivided, spurless, clawed, the *claw* continuous with the base of the column ; *lamina* spreading, crested at the base. *Column* erect, with a membranaceous margin, winged on each side at the apex. *Anther* 2-celled. *Pollen-masses* 2, solid, with a linear *caudicula*, and a hooked *gland*. *Epiphytic*, pseudo-bulbous plants. *Leaves* plicate. *Scape* terminal, sheathed. *Flowers* handsome.

## SPECIFIC CHARACTER.

O. Rossii ; *pseudo-bulbis* ovatis, cæspitosis, ancipitibus, monophyllis ; *foliis* oblongo-lanceolatis, *scapo* radicali subbifloro longioribus ; *bracteis* membranaceis, carinatis, acuminatis ; *sepalis* lincari-lanceolatis, carinatis, acuminatis, patentibus ; *petalis* oblongis, obtusis, revolutis ; *labello* subrotundo-ovato, emarginato, undulato, lamellis unguis confluentibus, rotundatis, denticulis 2 anterioribus obtusis ; *columnâ* apterâ pubescente.—(*Sertum Orchid.* t. 25.)

*Pseudo-bulbs* ovate, clustered, two-edged, bearing one leaf ; *leaves* oblong-lanceolate, longer than the radical, somewhat 2-flowered *scape* ; *bracts* membranaceous, keeled, acuminate ; *sepals* linear-lanceolate, keeled, acuminate, spreading ; *petals* oblong, obtuse, revolute ; *lip* roundish-ovate, emarginate, undulate, lamellæ of the claw confluent, rounded, with two anterior obtuse little teeth ; *column* wingless, pubescent.

*Var. acuminatum*. *Foliis* lanceolatis, pergameneis ; *sepalis* lanceolatis, acuminatis ; *labello* subrotundo-ovato, indiviso.

*Leaves* lanceolate, parchment-like ; *sepals* lanceolate, acuminate ; *lip* roundish-ovate, undivided.

Descr.—*Pseudo-bulbs* much compressed, the recent ones lenticular, smooth, the older ones wrinkled, invested with the withered sheaths. *Leaves* recurved, about 6 inches long, of a parchment-like substance. *Scape* erect, 2-flowered, with a bract about the middle, and one at the base of each pedicel. *Flowers* from two and a half to three inches across. *Sepals* spreading, narrow, lanceolate, acuminate, with a fleshy green keel, a cream-coloured ground, slightly tinted towards the base with yellowish-green, and copiously marked with blotches, and short transverse

bars of rich brown. *Petals* white, revolute, with a few spots of brown at the base. *Lip* of a pure, beautiful white, the claw parallel with the column, the crest formed of two elevated fleshy lamellæ, marked on the inner side with a few yellowish-brown streaks, connate in front, and terminating in two short, obtuse teeth. The *limb* deflexed, and spreading nearly at right-angles with the claw, ovato-rotundate, undulate, undivided.

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This handsome plant is in the collection of George Barker, Esq., who received it from Mexico, where it was found by his collector, Mr. John Ross. It differs in several respects from the original species, *O. Rossii*, as figured by Dr. Lindley in the *Sertum*, and Botanical Register. The flowers are larger; the sepals are more acuminate, and free from the yellowish-green tint; while the lip is undivided, not emarginate.

It requires the hot and humid stove during the growing season; but should be kept more cool and dry when at rest. The soil should be rough sandy peat, mixed with small drainers. It may be increased by division of the pseudo-bulbs.

## ON THE NATURAL ORDER NYMPHÆACEÆ.

The plants comprised in this natural order form a most interesting and highly ornamental group: they are perennial aquatics, with fleshy, floating leaves, either peltate or cordate in shape, and bearing large showy, and occasionally fragrant flowers. The order *Nymphæaceæ* has till lately contained but four genera, viz., *Euryale*, *Nymphæa*, *Nuphar*, and *Barclaya;* of which *Nymphæa* (so named in poetical allusion to the Naiads or water-nymphs) has been selected as the type, and with which the others agree in certain important characters. The order is represented in our own country by *Nymphæa alba* (the white water-lily), *Nuphar lutea* (the yellow water-lily), and *Nuphar minima* (least yellow water-lily); all the others are exotics. Among the British species *Nymphæa alba* is conspicuous as a beautiful, and by no means unfrequent ornament, of our ponds and streams. The peduncle on which the large white flower is situated, and which varies in length according to the depth of the water in which it grows, appears to be endowed with a certain degree of irritability, approaching indeed to a sensitive property, by means of which it is observed to emerge from the water, and expose its opening blossom to the influence of the morning sun; and on the approach of evening to droop, and either repose upon, or sink beneath the surface, till again excited by the return of the morning rays. This elevation and depression of the flower-stalk continues daily, until the chief object of the fructification (the impregnation of the ovules) is accomplished. The flowers usually expand about seven o'clock in the morning, and close about four o'clock in the afternoon.

> "Those virgin lilies, all the night
> Bathing their beauties in the lake,
> That they may rise more fresh and bright,
> When their beloved sun's awake."

This remarkable fact in the economy of *Nymphæa alba* is observed also in most, if not in all, of the other species, of which about nine (according to Mr. Loudon) are known, and have been introduced to this country from various parts of the world; viz., four from the East Indies, one from North America, one from Siberia, one from China, one from Egypt, and one from the Cape of Good Hope.

Of the genus *Nuphar* (yellow water-lily) we have two species, natives of this country: *Nuphar lutea* is common in pools and still waters in many parts of Britain, the flowers of which, having an alcoholic odour resembling that of brandy, are known in some parts of the country by the name of brandy-bottles: *Nuphar minima* is found in the lakes of Scotland.

Of the genera *Euryale* and *Barclaya* it is unnecessary to say much; the former, a native of India, is a noble aquatic, the fleshy rhizomata of which, like those of its allies, are eatable.

*Barclaya* is also an Indian genus, so named by Dr. Wallich, in compliment to the late Robert Barclay, Esq., of Bury Hill, a munificent patron of botany.

All the *Nymphæaceæ* are exceedingly ornamental, and worthy of careful cultivation: most of the exotic species, however, require the stove, in which they succeed very well if placed in large pans of water. The greater number of the species of *Nymphæa* bear white or pink flowers; in two only (*cærulea* and *stellata*) they are blue. The flowers of all the species of *Nuphar* are yellow.

Some of the species of these plants are found in immense quantities in their native countries, where their thick fleshy rhizomata and their seeds are used by the inhabitants, especially in times of scarcity, as important articles of diet; the farinaceous matter contained in them affording a considerable degree of nutriment. The rhizomata of *Nuphar lutea*, according to Linnæus, are used in Sweden in times of scarcity, mixed with the inner bark of *Pinus sylvestris*, which are pounded together, and made into cakes. The seeds of *Nymphæa Lotus*, which grows in vast quantities in Lower Egypt, are said to have been used by the ancient Egyptians, who dried and ground them, and made them into bread.

To the plants belonging to this natural order a most important addition has lately been made, by the discovery of that extraordinary and gigantic plant *Victoria Regia*, which was found in Berbice by that zealous and enterprising traveller and naturalist, Mr. R. H. Schomburgk. This gentleman, who is a native of Germany, has been travelling for some years on account of the Royal Geographical Society, assisted by Her Majesty's Government. The scene of his most recent labours has been British Guayana, the natural productions of which country he has been exploring with singular perseverance. The discovery of the magnificent plant in question was described by Mr. Schomburgk in a communication transmitted to the Royal Geographical Society; and of which the following is an extract:—

"It was on the first of January this year, while contending with the difficulties Nature imposed in different forms to our progress up the river Berbice, that we arrived at a point where the river expanded, and formed a currentless basin; some object on the southern extremity of this basin attracted my attention; it was impossible to form any idea what it could be, and animating the crew to increase the rate of their paddling, we were shortly afterwards opposite the object which had raised my curiosity—a vegetable wonder! All calamities were forgotten; I felt as a botanist, and felt myself rewarded: a gigantic leaf, from five to six feet in diameter, salver-shaped, with a broad rim, of a light-green above, and a vivid crimson below, resting upon the water. Quite in character with the wonderful leaf was the luxuriant flower, consisting of many hundred petals, passing in alternate tints from pure white to rose and pink.

The smooth water was covered with the blossoms, and as I rowed from one to the other I always observed something new to admire. The leaf on its upper surface is of a bright green; in form almost orbicular, except that on one side it is slightly bent in; its diameter measured from five to six feet; around the whole margin extended a rim, from three to five inches high, on the inside light green, like the surface of the leaf, on the outside, like the leaf's lower surface, of a bright crimson. The ribs are very prominent, almost an inch high, radiating from a common centre; there are eight principal ones, with a good many others, branching off from them; these are crossed again by a membrane or bands at right angles, which gives the whole the appearance of a spider's web, and are beset with prickles; the veins contain air-cells like the petiole and flower-stem. The divisions of the ribs and bands are visible on the upper surface of the leaf, by which it appears areolated. The young leaf is convolute, and expands but slowly. The prickly stem ascends with the young leaf till it has reached the surface; by the time it is developed, its own weight depresses the stem, and it floats upon the water. The stalk of the flower is an inch thick near the calyx, and is studded with sharp elastic prickles, about three quarters of an inch in length. The calyx is four-leaved, each sepal upwards of seven inches in length, and three inches in breadth; at the base they are thick, white inside, reddish-brown and prickly outside; the diameter of the calyx is from twelve to thirteen inches; on it rests the magnificent corolla, which, when fully developed, completely covers the calyx with its hundred petals. When it first opens it is white, with pink in the middle, which spreads over the whole flower the more it advances in age, and it is generally found the next day altogether of a pink colour; as if to enhance its beauty, it is sweet-scented. Like others of its tribe, the petals and stamens pass gradually into each other, and many petaloid leaves may be observed which have vestiges of an anther. The petals next to the leaves of the calyx are fleshy, and possess air-cells, which certainly must contribute to the buoyancy of the flower. The seeds of the many-celled fruit are numerous, and imbedded in a spongy substance. We met with the plants frequently afterwards, and the higher we advanced, the more gigantic they became: we measured a leaf which was six feet five inches in diameter, its rim five inches and a half high, and the flower across fifteen inches."

It would appear that the plant was considered by Mr. Schomburgk to be a new species of Nymphæa, to which he gave the specific name *Victoria;* being anxious that so splendid a vegetable production should be distinguished by the name of Her Britannic Majesty: but, upon more particular examination by Professor Lindley, it proved to be a new genus, which he accordingly named *Victoria regia.*

In some of its external features, such as the large floating leaves, and the numerous prickles upon their under surface, as well as upon the leaf-stalk, the

flower-stalk, and the calyx, the genus *Victoria* resembles the Indian genus *Euryale;* from which it differs in several essential points of structure. It differs from *Nymphæa*, to which, as observed by Dr. Lindley, it is much more closely allied, in some important characters upon which it is unnecessary to dwell. From Mr. Schomburgk's description of the leaves, and from specimens of the flowers transmitted by that gentleman in salt and water to the Royal Geographical Society, Dr. Lindley has been enabled to give the following character.

VICTORIA.

Calyx campanulatus limbo 4-partito deciduo. Petala indefinita, fauce calycis inserta, exteriora patentissima, interiora incurva multò minora. Stamina plurima petaloidea, fauce calycis inserta; exteriora fertilia libera, interiora sterilia cornuta stigmatibus a tergo adnata. Ovarium inferum multiloculare; loculis polyspermis; ovulis parietalibus; stylis in campanulam sulcatam, tubum calycis vestientem connatis; stigmatibus maximis reniformibus, carnosis. Fructus campanulatus, truncatus, carnosus, intra basin capsulam gerens medio longè rostratam, polyspermam.

## THE NATURALIST'S AUTUMNAL WALK.

"The little excursions of the naturalist, from habit and from acquirement, become a scene of constant observation and remark. The insect that crawls, the note of the bird, the plant that flowers, or the vernal green leaf that peeps out, engages his attention, is recognised as an intimate, or noted from some novelty that it presents in sound or aspect. Every season has its peculiar product, and is pleasing or admirable from causes that variously affect our different temperaments or dispositions; but there are accompaniments in an autumnal morning's woodland walk, that call for all our notice and admiration; the peculiar feeling of the air, and the solemn grandeur of the scene around us, dispose the mind to contemplation and remark; there is a silence in which we hear everything, a beauty that will be observed. The stump of an old oak is a very landscape, with rugged alpine steeps bursting through forests of verdant mosses, with some pale, denuded, branchless lichen, like a scathed oak, creeping up the sides or crowning the summit. Rambling with unfettered grace, the tendrils of the Briony (*Tamus communis*) festoon with its brilliant berries, green, yellow, red, the slender sprigs of the hazel, or the thorn; it ornaments their plainness, and receives a support its own feebleness denies. The agaric, with all its hues, its shades, its elegant variety of forms, expands its cone sprinkled with the freshness of the morning; a transient fair, a child of decay, that "sprang up in a night, and will perish in a night." The squirrel, agile with life and timidity, gamboling round the root of an ancient beech, its base overgrown with the dewberry (*Rubus cæsius*), blue with

unsullied fruit, impeded in his frolic sports, half angry, darts up the silvery bole again, to peep and wonder at the strange intruder on his haunts. The jay springs up, and, screaming, tells of danger to her brood, the noisy tribe repeat the call, are hushed, and leave us; the loud laugh of the woodpecker, joyous and vacant; the hammering of the nuthatch, cleaving its prize in the chink of some dry bough; the humble bee, torpid on the disc of the purple thistle, just lifts a limb to pray forbearance of injury, to ask for peace, and bid us

'Leave him, leave him to repose.'

The cinquefoil, or the vetch, with one lingering bloom yet appears, and we note it from its loneliness. Spreading on the light foliage of the fern, dry and mature, the spider has fixed her toils, and motionless in the midst watches her expected prey, every thread and mesh beaded with dew, trembling with the zephyr's breath. Then falls the "sere and yellow leaf," parting from its spray without a breeze tinkling in the boughs, and, rustling scarce audibly along, rests at our feet, and tells us that we part too. All these are distinctive symbols of the season, marked in the silence and sobriety of the hour; and form, perhaps, a deeper impression on the mind than any afforded by the verdant promises, the vivacities of spring, or the gay profuse luxuriance of summer."

*Journal of a Naturalist.*

## BOTANICAL NOTICES OF NEW PLANTS.

### DICOTYLEDONES.

Clematis lathyrifolia. Bess. Lathyrus-leaved Clematis. *Bot. Reg.* t. 61. This is a very showy species of *Clematis*, bearing a profusion of white flowers, and nearly allied to *C. angustifolia*. The native country is not determined. Dr. Lindley states that he has only seen it in the London Horticultural Society's collection, where it was received from the late Mr. Fischer, of the Göttingen Garden, under the name here adopted.

Plants, however, have been grown in the garden of the Birmingham Botanical and Horticultural Society for some years, received from the same source as mentioned by Dr. Lindley, from which plants we have procured a specimen.

It is hardy, and will grow in any garden soil. It spreads itself on the ground, and therefore requires to be tied up to a stake; and if planted in any situation, will produce a pleasing effect.

#### SOLANEÆ.

Fabiana imbricata. Ruiz et Pav. Imbricated Fabiana. *Bot. Reg.* t. 59. This is a very delicate free-flowering plant, bearing snow-white blossoms. It was

originally discovered by Dombey, in Chili, and has recently been found also by Mr. Cuming.

This plant in appearance closely resembles the *Heath* tribe, and at first sight, or from a slight examination, may easily be taken for one; indeed, according to Dr. Lindley, it may be considered a connecting link between the two orders.

It was published from a plant sent from Messrs. Lucombe, Pince, and Co., Exeter. It is also in the collection of Messrs. Rollison, at Tooting.

It may be cultivated in the same way as the Cape Heaths. It requires the greenhouse, or a pit, to protect it sufficiently from the frost, during the winter; it should also be placed near to the glass, and have plenty of air. The soil should be peat and sand. *Bot. Reg.*

PROTEACEÆ.

Hakea dactyloides. Brown. Finger-leaved Hakea. *Bot. Mag.* t. 3760. This is a species which possesses a handsome foliage, and numerous clusters of pale yellow flowers. This, or the other species of the genus, are not worthy of cultivation, except as a botanical curiosity. It is a native of New Holland, and was raised from seeds which were sent to the Botanic Garden, Edinburgh, by Mr. Fraser, in the year 1827. It flowers in April. *Bot. Mag.*

CACTEÆ.

Lepismium commune. Pfeift. Common Lepismium. *Bot. Mag.* t. 3763. This is a pretty species, bearing numerous small, delicate pinkish-white flowers. It is a native of Brazil. The drawing was made from a plant in the collection of the Glasgow Botanic Garden, which was presented to that establishment by Mr. Hitchin, a gentleman well known as a highly successful cultivator of succulent plants.

It flowers in October. This plant was called a *Cereus*, by Prince de Salm Dyk, which name was retained by the celebrated professor De Candolle. This order, however, has lately been revised by Pfeiffer, who has separated it from that genus, under the above name; but, according to Sir W. J. Hooker, the evidence of the necessity for making it a new genus is not sufficiently strong. He, Sir W. J. Hooker, considers it nearly allied to the genus *Rhipsalis*, and very similar in habit to *Rhipsalis alatus*, Pfeiff. *Bot. Mag.*

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MONOCOTYLEDONES.

LILIACEÆ.

Scilla pratensis. W. et K. Meadow Squill. *Bot. Reg.* t. 63. This is a very pretty plant, bearing an abundance of lilac blue flowers in June, and is a great acquisition, as it flowers after the spring bulbs are past, and before the autumn ones appear.

It was figured from a specimen in the collection of the Hon. W. F. Strangways, at Abbotsberry. It is stated to be nearly allied to *S. autumnalis*,

but differs from it not only in having evident bracts, and a smooth instead of a scabrous scape, but also in the time of flowering.

It is stated to be a native of Croatia, inhabiting the fields and meadows by the side of the river Korenicza, and more especially near to the village of that name.

Like most other bulbous roots, it requires a rich sandy soil, to be supplied with plenty of moisture during the growing season, and should not be taken up before the leaves become yellow, as cutting the leaves of bulbous plants before the new bulbs are perfectly matured is very injurious. *Bot. Reg.*

IRIDEÆ.

Patersonia sapphirina. Lindl. Sapphire Patersonia. *Bot. Reg.* t. 60. The beautiful blossoms of the Patersonias, Maricas, and Irises, are so well known to the cultivators of plants, that to extol their beauty would be useless ; however it may be as well to say that this species is little, if any, inferior to any of the Order known. If there is any thing to be regretted, it is its short duration. It is a native of the Swan River, and was raised from seeds obtained by Mr. Mangles. It requires greenhouse protection.

The same species is in the collection of the Birmingham Botanical and Horticultural Society, in which establishment it has flowered this present summer.

ORCHIDEÆ, § MALAXIDEÆ.

Dendrobium formosum. Roxb. Beautiful Tree Bloom. *Bot. Reg.* t. 64. This is certainly a most magnificent species, which flowered at Chatsworth May 1838. It stands unrivalled amongst the Asiatic Orchideæ, and can be compared with none except *Phalænopsis amabilis.* It was gathered by Dr. Wallich on the mountains of Nepal and Sylhet, also in the province of Martaban, near Moulmein, and in Tavoy on the Tenasserim coast, flowering and fruiting in both the dry and rainy seasons. It was found by Mr. Griffith also on trees, inhabiting damp places in the neighbourhood of Moulmein. Dr. Wallich says it grows generally in large tufts upon trees, sometimes upon rocks. The flowers emit a faint perfume. It is best cultivated by placing it in a box containing some peat for the roots, and suspended from the roof. It must be frequently syringed during the growing season, and when that period is over, it must be kept cool. This treatment is said to make it grow strong, and flower freely. *Bot. Reg.*

§ VANDEÆ.

Cyrtochilum mystacinum. Lindl. Whiskered Mystacinum. *Bot. Reg.* t. 62. This is a very pretty species, and bears bright yellow flowers. It is a native of Peru, from whence it was obtained by R. Harrison, Esq., of Aighburgh, and in whose collection it produced its flowers at the latter end of 1837. It requires to be cultivated in a moist stove, but appears to succeed in a temperature lower than is usual in these houses. *Bot. Reg.*

## CALENDAR OF GARDENING OPERATIONS FOR DECEMBER.

The plant and stove heat may be reduced to from 55 to 60 degrees during the night. Fresh surface the pots whenever their soil gets hard or green with moss. The soil for surfacing may be a little stiffer than that generally used for potting, that it may not be so readily washed into holes by watering. During fine weather give as much air as possible to the greenhouse, and carefully pick off all decaying leaves, as they often, in a wet season in particular, generate damp upon the plants. If necessary, occasionally light fires during the day to dry off the damp, giving plenty of air at the same time. As soon as frost sets in, and fires are obliged to be lighted, there is no more danger of damp.

Attend to Carnations and Picotees, as well as half-hardy plants in frames and pits, taking off all decaying and damping leaves, otherwise they will suffer much, particularly during such a wet season.

Continue to put into the houses for forcing, Roses, Lilacs, Rhododendrons, and all other hardy plants wanted to come into flower early.

Where there is a Mushroom-house, the beds should be made up so as to follow each other in bearing successively.

Dig up all ground free from crops, leaving it rough, so as to be ready for cropping in spring.

Prune hardy shrubs, and dig amongst them.

Planting of deciduous trees and shrubs may now be done at any time, when the soil is not over wet. In clayey soils it should be deferred until spring.

Many deciduous shrubs may now be layered for increase, and those layered last season will be ready for taking off and transplanting.

Crops of early Peas may be sown on a warm border facing the south.

# BEGONIA MEYERI.

(*Meyer's Begonia.*)

LINNEAN SYSTEM.
MONŒCIA POLYANDRIA.

No. 130.

NATURAL ORDER.
BEGONIACEÆ.

GENERIC CHARACTER.

Begonia (Lin.) Masc. *Corolla* nunc 0, nunc tetra-petala. *Calyx* polysepalus; sepala plerumque (non semper) inæqualia.—Fœm. *Corolla* nunc 0, nunc tetrapetala. *Calyx* sepalis 4-9 plerumque inæqualibus. *Styli* 3 bifidi rariùs multifidi. *Capsula* triquetra, alata, triloculares, polysperma.—(*Flor. Cab.* vol. i. fol. 51.)

Male. *Corolla* sometimes none, sometimes 4-petaled. *Calyx* many-sepaled; sepals generally (not always) unequal.—Female. *Corolla* sometimes none, sometimes 4-petaled. *Calyx* with from 4 to 9 sepals, generally unequal. *Styles* 3, 2-cleft, rarely many-cleft. *Capsule* 3-sided, winged, 3-celled, many-seeded.

SPECIFIC CHARACTER.

B. Meyeri; *caulescens* villosissima; *foliis* carnosis utrinque villosis inæqualiter cordatis acutis obsoletè repando-dentatis, suprà pallidè virentibus subtùs incanis; *stipulis* latè ovatis marcescentibus; *floribus* masculis 4-petalis, petalis exterioribus concavis subtùs villosis; *floribus* fœmineis.

*Caulescent*, very hairy; *leaves* fleshy, hairy on both sides, unequally cordate, acute, with an obscurely toothed or rather repand margin, pale green above, hoary beneath; *stipules* broadly ovate, withering; *male* flowers 4-petaled, external petals concave, hairy beneath; *female* flowers.

Begonia Meyeri.—*Otto*, MSS.

Descr.—*Stem* erect, thick, a foot or more in height, pale, and densely villous. *Leaves* villous on both sides, exceedingly soft to the touch, pale green above, of a hoary whiteness beneath; petioles from two to three inches long, flattened and canaliculate on the upper side. *Stipules* broadly ovate, acute, densely villous, semi-amplexicaul. *Peduncle* terminal, about four inches long, dividing into two or three compact clusters, with a bractea at the base of each division: braeteas small, ovate, acute. *Male* flowers 4-parted, white, with a slight blush of pink, two external rounded, concave, densely hairy beneath; two internal smaller, obovato-oblong.

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This very distinct species of Begonia was received at the Birmingham Botanic Garden from the Royal Botanic Garden at Berlin, in 1838. It is a stove shrub,

erect and compact in its mode of growth; and although the flowers are not brilliant, is a very desirable plant, its handsome foliage making a very striking variety in the stove. It is a slow-growing species, and requires to be potted in a mixture of loam and peat with a little sand. It may be increased by cuttings, which strike freely, although from its slow growth they are produced but sparingly.

# ECHINACEA DUBIA.

(*Doubtful Echinacea.*)

LINNEAN SYSTEM.
SYNGENESIA POLYGAMIA.

No. 131.

NATURAL ORDER.
COMPOSITÆ § SENECIONIDEÆ.

## GENERIC CHARACTER.

Echinaceæ (Mœnch.) *Capitulum* multiflorum heterogamum, *flosculis radii* neutris longè ligulatis 1-serialibus, *disci* hermaphroditis regulariter 5-fidis, tubo subnullo, fauce nudâ, limbi dentibus erectis. *Involucrum* 3-seriale, squamis lanceolatis ciliatis. *Receptaculum* ovatum, paleis rigidis supernè cartilagineis flores disci superantibus onustum. *Staminum* filamenta ex imâ corollâ orta. *Styli* rami appendiculis semilanceolatis superati. *Achænia* tetragona obpyramidata crassa pappo irregularitèr lacero subcoroniformi deciduo coronata. *Herbæ Boreali-Americanæ perennes. Folia* radicalia petiolata, caulina alterna sessilia serrata aut integerrima. *Rami* supernè nudi 1-cephali. *Capitula* ampla, ligulis purpureis 2-3-dentatis 1-2 pollices longis, floseulis disci obscurè virescentibus.—(*De Cand. Prod.* vol. 5, 554.)

*Head* many-flowered, heterogamous; florets of the ray neuter, longly strap-shaped, in a single series; florets of the dise hermaphrodite, regularly 5-cleft, tube searcely any, throat naked, teeth of the limb erect. *Involucre* in a triple series, with lanceolate, ciliated scales. *Receptacle* ovate, beset with rigid *paleæ* cartilaginous in their upper part, and exceeding in length the flowers of the dise. *Filaments* of the stamens arising from the bottom of the corolla. *Branches* of the style crowned with little semilanceolate appendages. *Achænia* 4-sided, obpyramidal, thick, crowned with deciduous irregularly divided pappus.—*Perennial plants*, natives of North Ameriea. *Radical* leaves petiolate, those of the stem alternate, sessile, serrated, or very entire. *Branches* naked above, 1-headed. *Heads* large, rays purple 2 or 3 toothed, 1 or 2 inches long; florets of the dise obseurely greenish.

## SPECIFIC CHARACTER.

E. dubia; *scabra*, foliis radiealibus longè petiolatis, pandurato-trilobatis, lobis distantibus, *caulinis* conformibus sessilibus; paleis floseulis brevioribus.

*Scabrous*, radieal leaves longly petiolate, pandurately three-lobed, lobes distant, those of the stem similar in form, sessile; paleæ shorter than the florets.

Descr.—Whole plant rough with short coarse hairs; radieal leaves numerous, erowded, from 10 to 12 inehes long, coarsely and irregularly toothed, ciliated, more or less panduriform, 3-lobed, with a lengthened spaee between the terminal lobe and the posterior lobes, which are extended backwards into a leafy border on each side of the lengthened petiole; cauline leaves small, sessile, minutely toothed, similar in shape to the radieal leaves, and, like them, edged with coarse ineurved ciliæ. *Flower-stalk* strong, furrowed, 1-flowered, with occasionally one or two lanceolate braetes on the upper part. *Scales* of the involuere coarse, rigid, arranged in three series, of which the outer are acuminate, and exceed in length the florets of the ray. *Flowers*

large, about 4 inches in diameter. *Florets of the ray*, neuter, of a purplish lilac, lanceolate, the apex usually entire, occasionally with 2 teeth. *Florets of the disc* regular, externally pubescent, tube narrow and contracted at the base, ventricose above the contraction, and terminating in a 4 or 5-toothed limb, teeth spreading, somewhat recurved. *Paleæ* shorter than the florets, oblong-lanceolate, subdentate, with a dark brown, cartilaginous, pubescent, dorsal band extending from the base to the apex. *Achænia* 4-sided, crowned with very short pappus, irregularly divided into numerous, very minute bristle-like appendages, which, however, are not observable in the florets of the ray.

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A HALF-HARDY herbaceous plant, with a black, tuberous root, raised from Mexican seeds presented to the Birmingham Botanical and Horticultural Society, in 1837, by George Barker, Esq., of Springfield. It is a handsome plant, and makes a showy appearance as a border flower. It was found in Mexico by Mr. John Ross, Mr. Barker's collector.

In its general appearance it resembles *E. heterophylla;* from which, however, it differs in many respects, particularly in the very long external scales of the involucre, in the usually entire apex of the rays, in the paleæ being shorter than the florets, and in the shape of the cauline leaves, which are panduriform and sessile, not lanceolate and petiolate: it resembles also in some degree *E. Dicksoni*, published in May, 1838, by Dr. Lindley in the *Bot. Reg.;* from which it may be distinguished by its coarse pubescence, by the want of a tooth-like lobe at the inner edge of the floret of the ray, and by the shape of the cauline leaves.

It should be kept during winter in a cold frame, or in the greenhouse, and transplanted into the open ground in May. It flowers late in the autumn. From the appearance of the roots, it is probable that they might be preserved, like *Dahlia* and *Mirabilis* roots, by being stowed away dry in a cellar; but it is, at present, too soon to try the experiment. It can only be increased, probably, by seeds, which may be insured by impregnating some of the earliest flowers. It will grow in any common garden soil.

The generic name *Echinacea*, as observed by Dr. Lindley, is very objectionable; being formed from the adjective *echinaceous*, bristly, in allusion to the sharp points of the scales of the receptacle, which bristle over the centre of the flower-heads in some of the species.

Fig. 1, Floret of the disc with its palea; 2, Achenium crowned with the minute teeth of the short, divided pappus.

# CHOROZEMA VARIUM.

(*Various-leaved Chorozema.*)

LINNEAN SYSTEM.
DECANDRIA MONOGYNIA.

No. 132.

NATURAL ORDER.
FABACEÆ OR LEGUMINOSÆ
§ PAPILIONACEÆ.

GENERIC CHARACTER.

Chorozema. (Labill.) *Calyx* semi-5-fidus bilabiatus, labio superiore bifido, inferiore 3-partito. *Corolla* carinâ ventricosâ alis breviore. *Stylus* brevis uncinatus. *Stigma* obliquum obtusum. *Legumen* ventricosum 1-loculare polyspermum sessile aut subsessile.—Suffrutices Australasici. *Folia* alterna simplicia sinuato-dentata aut integra.—(*De Cand. Prod.* vol. 2. p. 102.)

*Calyx* half-5-cleft, 2-lipped, upper lip bifid, lower lip 3-parted. *Corolla* with a ventricose keel shorter than the wings. *Style* short, hooked. *Stigma* oblique, obtuse. *Legume* ventricose, 1-celled, many-seeded, sessile or subsessile.—Shrubby Australasian plants. *Leaves* alternate, simple, sinuato-dentate or entire.

SPECIFIC CHARACTER.

C. varium; *foliis* subsessilibus oblongo-ovatis cordatis undulatis spinoso-dentatis pubescentibus, racemis axillaribus terminalibusque graeilibus cernuis multifloris, pedicellis ad apicem bracteolatis, calycibus ovarioque pubescentibus.

*Leaves* subsessile, oblong-ovate, cordate, undulate, spinoso-dentate, pubescent; *racemes* axillary and terminal, slender, nodding, many-flowered; *pedicels* with bracteæ at the apex; *calyxes* and ovary pubescent.

Chorozema varium. *Bot. Reg.* N. S. p. 49.

Descr.—*Shrub*, moderately branched, branches slender ascending. *Leaves* rigid, copiously reticulated, with spinous teeth. *Racemes* nodding at the apex; the lateral ones 2 or 3 times longer than the leaves, the terminal ones from 4 to 6 inches long. *Braeteas* subulate, hairy. *Upper lip* of the calyx 2-parted, lower 3-parted, densely covered with short hairs. *Standard* 2-lobed, of an orange-yellow richly shaded at the base with red; *wings* of a rich red.

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An elegant, free-growing, greenhouse shrub, raised from seeds imported by Robert Mangles, Esq., of Sunning Hill, Berks, by whom cuttings were kindly sent to the Birmingham Botanic Garden in 1837, and from which our plant was raised.

*Chorozema varium* was figured by Dr. Lindley in the Botanical Register, No. 9, of the present year, pl. 49; and we would gladly have availed ourselves of the

specific character of so accurate a botanist as Mr. Bentham, but that our plant appears to differ in several respects, which will be readily perceived by comparison.

As regards its cultivation, it succeeds best in a warm part of the greenhouse. It should be potted in a mixture of peat, loam, and sand. The plants are apt to go off when they get to a considerable size, by the small fibres getting around the sides of the pot; to prevent which the pot should be placed within another of a larger size, and the space between filled up with moss, sand, or soil. It is readily increased by cuttings of the young wood placed in sand and in a gentle heat.

For the derivation of the generic name, see an interesting account of the discovery of the original species, by Labillardière, in vol. 2, p. 18 of the *Flor. Cab.*

The specific name *varium* was applied in consequence of two or three varieties having been raised from the same seeds, one of which had the leaves nearly free from spines.

Fig. 1, standard; 2,2, wings; 3, inflated keel; 4, calyx; 5, calyx with the segments removed to show the germ and stigma.

# ARISTOLOCHIA HYPERBOREA.

(*Northern Aristolochia.*)

LINNEAN SYSTEM.
GYNANDRIA HEXANDRIA.

No. 133.

NATURAL ORDER.
ARISTOLOCHIÆ.

GENERIC CHARACTER.

Aristolochia (Lin.) *Perianthium* coloratum, tubulosum, basi ventricosum, apice dilatatum, in ligulam extensam. *Antheræ* sex subsessiles, substigmate. *Stylus* vix ullus. *Stigma* sex-partitum. *Capsula* sex locularis.—(*Brown. Prod. Flor. Nov. Holland.* p. 349.)

*Perianth* colored, tubulose ventricose at the base, dilated at the apex into an extended ligula. *Anthers* six, nearly sessile, situate under the stigma. *Style* scarcely any. *Stigma* divided into six parts. *Capsule* six-celled.

Aristolochia hyperborea.—*Hort.*

Descr.—*Stem* twining. *Leaves* very large, cordate-reniform, smooth, with a very open sinus at the base. *Flowers* very large, of a pale yellow colour, variously marked and spotted with brownish purple, the tube obovate, limb 2-lipped; upper lip short, ovate, acute; lower very long, inflated at the base, and terminating in a broad, plaited, membranous expansion.

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The plant from which our drawing was taken is in the collection of Mr. Knight, of King's Road, Chelsea, in whose establishment it is cultivated under the name here given. It will be perceived by the figure, that when our artist commenced the drawing, the lower part of the flower or ligula had begun to shrivel, and the whole flower was quite decayed by the time our drawing arrived. We therefore have had no opportunity of examining it, and are consequently prevented from giving it a specific character; but judging from the drawing, and the figure of *Aristolochia cymbifera* as figured in the Botanical Register, vol. 18, it appears to us to come so near to that species that we have strong doubts of its being really distinct. Still, however, it may, if attentively examined, present some points of difference sufficient to constitute it a variety, if not a distinct species. Mr. Knight is doubtful from whence he received it, but he is inclined to think that it is a native of the northern districts of India. But notwithstanding the doubt respecting its specific identity, as well as the country of which it is a native, there can be no doubt of its being a very handsome plant. Indeed the large and singularly shaped flowers, and their curious and elegant markings, together with the splendid foliage, must claim admission for it into every collec-

tion of choice stove-plants, and, if trained to the roof, its beauty will be very conspicuous; while it has an additional claim upon the attention of the amateur as being nearly destitute of that offensive odour so common in this natural family. It is a shrub, and requires stove heat; and to be grown, and flowered in perfection, it ought either to be planted out into the pit, or have plenty of pot room. The soil in which it should be potted, is that in which the genus thrives best, viz. a mixture of loam, sand, and peat. It may readily be increased from cuttings.

# ON THE DEVELOPMENT OF THE THECA, AND ON THE SEXES OF MOSSES.

Every vegetable anatomist is acquainted, more or less, with the researches of Mr. Valentine, and with the accurate and philosophical conclusions at which he has arrived. It was by his beautiful and perfect preparations of spiral vessels (together with those of Mr. Griffiths), that their actual formation became known; a subject which, until that period, had been involved in considerable obscurity, and upon which the most distinguished botanists of the age were divided in opinion. Since that time the attention of Mr. Valentine has been directed to the mode in which the theca of mosses is developed, as well as to the peculiar structure of those minute and delicate organs which are destined for the reproduction of the species; a subject which hitherto had been but very imperfectly understood. The result of his investigations he has given in a paper read before the Linnean Society in 1833, and published in the 18th volume of their Transactions*; from which we shall beg leave to make the following extracts, in order to make our readers acquainted with the discoveries of that most accurate vegetable anatomist in a highly curious and interesting subject.

Mr. Valentine begins by observing that "There is, perhaps, no part of the physiology of plants involved in deeper mystery, or about which there is a greater diversity of opinion, than the sexuality of mosses." He then states that the theory which has obtained by far the greater number of followers is that of the celebrated Hedwig, who described two kinds of organs—the male, or *spermatocystidium*, and the female, or *pistillum;* the latter of which, becoming enlarged from impregnation by the former, forms the fruit. All that has been hitherto known about this body, continues Mr. Valentine, is, to use the words of Professor Hooker (*Muscologia Britannica*, introduction, ed. ii. p. 11), that "the base of one of the pistils gradually swells more and more, and after a certain period, the upper part of the style and stigma withers, but still remains. The germen is now seen covered by a thin membrane, which, as the fructification advances, separates transversely at the bottom, and rising up with the more advanced germen, takes the name of calyptra, or veil. It is carried up by means of a pedicel, or fruit-stalk, which now develops itself, and reaches to a different height in different species, in some being five or six inches in length. When it has attained its utmost development, the mature germen becomes the perfect fruit, and is called the capsule." We find, says Mr. Valentine, in this passage the opinion that the capsule, or theca, as it is now more properly named, is formed in the first instance, and carried upwards by the subsequent development of the fruit-stalk or seta. There are generally several of these pistilla

* Observations on the Development of the Theca, and on the Sexes of Mosses. By William Valentine, Esq. F.L.S.

together: they are often mixed with jointed pellucid filaments, "*fila succulenta*" of Hedwig, and in some cases accompanied by the supposed stamens, which in others grow on a different part of the same plant (monœcious), or on a distinct plant (diœcious). Mr. Valentine then states that the object of his paper is chiefly to explain the anatomy of these pistilla, their structure being such as to throw considerable light on the sexual theory; and that he was led to the examination of this subject by discovering the highly curious fact, that the setæ of mosses and the *Jungermannias* terminate downwards in a cone, which is inserted within a corresponding cavity of the branch, to which it has but a very slender attachment, or in other words, that the seta has very little *if any* organic connexion with the plant. This structure appearing to be so anomalous, he determined on the first opportunity to investigate the cause. The following observations are the result of his labours.

"In the very young state the pistillum contains a single unconnected oval transparent body, or cell, which is situated about one-third from the base. The pistillum as yet has not begun to enlarge, but is of one uniform diameter. The cell is present before the apex of the pistillum has burst open to form the stigma; and consequently before there is any communication, by means of the tubular style, with the external air. This canal, however, is formed before the bursting open of the apex, and leads directly down to the cell, which appears to be situated in its lower extremity. The cell may be distinguished through the walls of the pistillum with the assistance of a good Wollaston doublet, and I have succeeded in dissecting it out uninjured. It was of a firm texture, a quality depending probably on the thickness of the membrane; it was also beautifully pellucid, and contained a quantity of moving particles. Upon pressing it with a piece of talc, it burst, and the moving particles escaped. Its diameter was between the one-thousandth and the one-five-thousandth of an inch. Generally one or two only of the pistilla in the same bud arrive at perfection, and the abortive ones are destitute of this cell; whilst, on the contrary, in *Bryum ligulatum* nearly all the pistilla, sometimes amounting to between twenty and thirty, become fruit, and in every one of them may the cell be detected. *Bryum roseum* very rarely produces fruit in this country, but in winter it not uncommonly possesses healthy-looking pistilla. The manner of the development of this body is exceedingly simple. Soon after the opening of the upper extremity of the style, another cell is formed on the upper surface of the first. The two adhere firmly to each other, and may be dissected out together. Presently another cell is formed either on the upper surface of the second, or on its side; then appears another, and so on gradually increasing in number. When about ten cells are developed the dissection becomes comparatively easy, and the oblong mass may be exposed, with the original cell still remaining at the base. In this stage it has become rather flattened on the upper surface from the pressure of the newly-formed cells. Whilst this process is going on, the base of the pistillum itself increases in size, not *by distention*, as is univer-

sally supposed, but by the *addition of fresh matter*. At the same time the style becomes of a red or brown colour, of a rigid texture, and *never* increases in size after the opening of its canal. In *Funaria hygrometrica* the pistillum elongates considerably before the base has increased in diameter, to allow of the rapid growth of the oblong or fusiform mass within, which now occupies its whole length from the apex immediately beneath the hardened style to the very base, and even beyond, having pushed its conical extremity deeper into the tissue, until at last it has actually penetrated the branch itself. After the pistillum has attained a considerable length, its base increases in diameter without a corresponding increase of the central body, so that a space is left between the two. Very shortly the pistillum separates transversely below the dilated portion, and is supported on the apex of what may now be called the seta, by the more rapid elongation of which the separation has been caused. At this period may be observed a sheath of elastic gummy secretion embracing the base of the seta, immediately opposite the point of separation between the upper part of the pistillum (now called calyptra) and the base, which has received the name of VAGINULA. This sheath of mucus gradually becomes solid and cellular, and by its connexion with the vaginula and its firm embrace of the seta, serves to secure the latter in its cavity.

"A period of a month or more follows the separation of the calyptra without any further change taking place than the gradual elongation of the seta. In some instances, as in *Encalypta vulgaris*, *Tortula ruralis*, and many more, three or four months are occupied by this process. The seta elongates by the addition of new matter *at the apex*, where it is always of a more delicate texture than nearer the base. The cells are also more crowded, less distinct in their outline, and have as yet no cavity. The further you examine from the apex, the more decidedly does the tissue become cellular, until it has arrived at maturity, when the cells are considerably elongated. After attaining a length varying in each species according to circumstances, the seta gradually enlarges in diameter at the apex, and imperceptibly assumes the form of the theca. A section of the dilated apex, if made at an early period, will exhibit a central portion of a cortical layer, only differing from the structure of the seta itself by being more distinctly defined. As the theca advances towards maturity, the cortical layer gradually recedes from the central axis, but is still connected with it by little transverse fibres, or rather strings of cells, which pass from one surface to the other without any apparent arrangement. The axis, or columella as it is now termed, is supported on a pedicel, which is continuous with the central tissue of the seta, whilst the outer layer, or *true* theca, is an expansion of the external layer of the seta. Surrounding the theca, near the apex, is a faint line, which indicates the situation of a transverse dehiscence to take place at the perfect maturity of the theca. The portion above this line varies considerably in figure, and is called the lid, or OPERCULUM. The ring, or orifice of the theca formed by the fall of the operculum, is called the mouth, or STOMA. It is necessary to name these parts in this stage of the development, to explain clearly the succeeding steps of the process.

"The distance of the columella from the theca varies in each species; in many being but trifling, whilst in some it is considerable, as in *Gymnostomum pyriforme*. But in none is it so remarkable, as far as I have examined, as in *Bartramia pomiformis*. In this plant the columella is borne on a pedicel even longer than itself, and only occupies a small space in the upper and middle part of the theca. A section of the columella, in this stage, exhibits a trace of division into an external layer, and a central axis. This external layer is gradually pushed outwards (until it comes in contact with the theca) by the formation of the sporules, between it and the axis to which the name columella is with greater strictness applied. The layer itself has received the name of internal or lining membrane of the theca; but as I have ascertained the presence of a distinct and very important living membrane to that part, it will be more convenient to assign the name of columellar membrane to this, as to the columella it assuredly most naturally belongs. The cavity in which the sporules are developed is closed on all sides, being bounded at the centre by the columella, and at the circumference by the columellar membrane, which passes outward from the base of the columella to the theca, on the inner surface of which it is reflected upwards to the stoma. The membrane is attached to the stoma, all round frequently by a distinct process; and after forming this attachment, it passes horizontally inwards, and becomes again continuous with the columella at its apex. Until about the period of maturity, or a little earlier, the columella is continuous from the base of the theca, up to the arch of the operculum, when a transverse line (indicating a tendency to separation) appears above the point of its connexion with the columellar membrane. Most commonly this separation does actually take place, and the upper portion falls with the operculum. This portion was first described, and named very appropriately, by Greville and Arnott, the opercular membrane. The opercular membrane, when mature, either remains attached to the columella, falls with the operculum, or (as in the genus *Polytrichum*) shrivels from below upwards, and remains attached to the apices of the teeth of the peristome, in the form of a *horizontal* membrane or tympanum."

"In an early stage the inner layer of the operculum separates in the form of a distinct membrane, which ultimately dividing longitudinally into a definite number of processes, or teeth, forms the peristome. In some rare instances this membrane never breaks up into teeth, as in the genus Diphyscium; whilst in one instance, Buxbaumia, it is double; the external splitting into ciliæ, and the internal remaining entire. At the same time that this membrane is formed from the opercular, the opercular membrane forms another, immediately within the first, by a separation of its exterior series of cells. This also, more or less, divides longitudinally into a determinate number of teeth, thus forming the *inner* peristome. The number of teeth forming each of these peristomes has been ascertained by muscologists to be either *four* or a *multiple* of that number*."

*(To be concluded in the next number.)*

* This fact appears to have been first ascertained by Dr. Brown, who has published some admirable observations on this subject in the Linnean Transactions, vol. xii., p. 557.

*To the Conductors of the Floral Cabinet.*

Gentlemen,

As a proof of the extraordinary size which the grape is capable of attaining under judicious management, I may mention that I lately cut a bunch of Black Hambro' grapes, one of the berries upon which measured *four inches in circumference*. My grapes generally have been unusually fine this year, which I attribute partly to the continued rains which we have had during the greater part of the summer, but chiefly to the free and unsparing manner in which they were thinned soon after the berries began to form, and again once or twice subsequently, and by which at least two-thirds of the grapes were removed. The house in which they were grown is a metallic one, similar in construction to those erected in the Botanic Gardens both of this town and of Manchester; it is thirty feet long by fourteen feet wide, and it has, during the last seven years, produced at least from two to three hundred-weight of grapes per annum. The grapes have not been forced; the house being kept only at greenhouse temperature.

I am, Gentlemen, yours very respectfully,

Thomas Clark, Jun.

Reservoir Road, Edgbaston,
*December 7th*, 1839.

P.S.—Should any one doubt the accuracy of my statement, I have preserved the grape in question, and shall be happy to show it to any person who will take the trouble to call at my residence.

## BOTANICAL NOTICES OF NEW PLANTS.

### DICOTYLEDONES.

#### CACTEÆ.

Cereus Martianus. Zuec. Von Martius' Cereus. *Bot. Mag.* t. 3768. This is a handsome species of *Cactus*, resembling both in habit and inflorescence the favourite *Cereus flagelliformis*, a plant well-known as an inmate of cottage residences. From this however it may readily be known by its different mode of growth, which is erect, not drooping; by its deeply furrowed stem, and by its much slenderer hair-like aculei. It is a native of Mexico, and was figured from a specimen in the collection at Woburn Abbey. It flowers readily and copiously in the spring, with the common treatment. *Bot. Mag.*

#### MELASTOMACEÆ.

Lasiandra petiolata. Grah. Petiolated Lasiandra. *Bot. Mag.* t. 3766. This is certainly a most beautiful species, bearing numerous large lilac flowers, which are in diameter about an inch and a half.

This species was received at the Edinburgh Botanic Garden from the Royal Berlin Garden in 1836, and from that plant the drawing and description in the above magazine were taken by Dr. Graham. Sir William Hooker however is of opinion that this species does not differ from *Lasiandra Maximiliana*, Mart. The country of which it is a native is not stated.

It requires the heat of the stove, and may be freely propagated by cuttings, which flower abundantly in June and July. *Bot. Mag.*

ERICEÆ.

Arbutus laurifolia. Lin. Laurel-leaved Strawberry Tree. *Bot. Reg.* t. 67. This is a very handsome species, allied to *A. andrachne* and *A. Menziesii*. From *A. andrachne* it differs in its smaller and much less coriaceous leaves, and also in the very peculiar form of the corolla, the contraction of which in the middle is so distinctly marked as to appear in some positions as if each end was separate. To *A. Menziesii* it is so similar that at one time it was thought to have been the same species, but upon examination it appears to be distinct. *A. Menziesii* has the raceme covered with a fine delicate down, which extends all over the pedicels, whilst the pedicels of *A. laurifolia* are nearly glabrous, and the remainder of the racemes coarsely downy. Furthermore, the bracts of *A. Menziesii* are spreading and foliaceous; those of *A. laurifolia* are scale-like, imbricated, and closely pressed to the branches: the leaves also of *A. Menziesii* are smaller and thinner than those of *A. laurifolia*.

This plant was introduced from Mexico by the last Lord Napier, and given to Mr. Lambert, who considers it to be the true *A. laurifolia* of Linnæus' Supplement, a plant concerning which there appears to have been considerable doubt. *Bot. Reg.*

SAPINDACEÆ.

Diplopeltis Hugelii. Lindl. Baron Hugel's Diplopeltis. *Bot. Reg.* t. 69. This is certainly a very delicate pretty plant, and was noticed at No. 70 of the Miscellaneous Botanical Notices. It is stated to be a hardy greenhouse shrub, growing about three feet high, and bearing a profusion of pink blossoms, which are produced in April and May. It requires the same treatment as such Cape plants as the genus *Hebenstreitia*. It may be readily increased by cuttings from the young wood, which will bear to be planted out in the open border in summer.

For the introduction of this plant the country is indebted to Mr. Andrew Toward, gardener to Her Royal Highness the Duchess of Gloucester, who obtained seeds from Swan River; where, according to Baron Hugel, it is found about the town of Freemantle. It has been raised also in the garden of the noble traveller at Vienna.

The real situation which the plant should take in the natural arrangement is considered by Dr. Lindley as uncertain, and is regarded by him as one of those

anomalous forms which stand intermediate, connecting them without corresponding with either. It was stated to belong to the order *Rutaceæ* by its twisted style, definite number of the floral envelopes, and the few-seeded ovary; but when it was more attentively examined, its indehiscent fruit, unsymmetrical flowers, curved embryo, large hypogynous disc at the back of the stamens, and the undotted leaves, were opposed to this idea. In the enumeration of the plants of Baron Hugel, of which this forms a part, Dr. Endlicher has placed it among the order *Sapindaceæ*, in consequence, it is supposed, of its unsymmetrical polygamous flowers, large disc, frequently 3-celled ovary, the structure of the embryo, and the trace of an arillus found on the seed.

Dr. Lindley however considered that in its structure it would be more allied to *Capparideæ* for the following reasons: that its habit was altogether that of the genus *Cleome*; that its stipitate ovary, glandular hairs, declinate stamens, and its large dimidiate disc, are all in accordance with that order; and also that the seeds do not materially disagree in structure. This idea however he afterwards abandoned, in consequence of the number of the sepals and petals, together with the many-celled ovary. Therefore, notwithstanding the discrepancy which exists, Dr. Lindley is of opinion that it is rightly placed by Dr. Endlicher, (at least in accordance with our present knowledge,) and forms a connecting link with *Capparideæ*. *Bot. Reg.*

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## MONOCOTYLEDONES.

### LILIACEÆ.

Tulipa maleoleus. Bert. Strong-smelling Tulip. *Bot. Reg.* t. 66. This very beautiful tulip is very nearly allied to *T. oculis solis*, and of which the Hon. W. F. Strangways considers it only a variety. The flowers are red and deeper than those of *T. oculis solis* or *præcox*, the inside being of a dark crimson: they exhale a weak but an unpleasant smell. The spot at the bottom of the petals is short, truncated at the apex, and emarginate, purplish with a yellow border: these spots are larger on the sepals than on the petals. The filaments are of a deep purple, having at the apex a light green. Mr. Strangways considers that it approaches nearer to the tulip of the Euphrates than to any of the Italian ones. There is stated to be a double variety cultivated in the Florentine gardens. It is a native of Florence, and is found in the fields and vineyards under *T. miniata*. It is the latest flowering tulip of its class. *Bot. Reg.*

### AMARYLLIDACEÆ.

Pentlandia miniata. Var. 2 Sulivanica. Herb. Red Lead Col. Pentlandia Var. *Bot. Reg.* t. 68. This variety was found at Guispicancha, near Cusco, in Peru, and was sent to Spofforth by J. B. Pentland, Esq., under the name of the Red Narcissus. The genus has been named after that gentleman, in compliment to his exertions for the introduction of the productions of Peru. *Bot. Reg.*

ORCHIDEÆ, § EPIDENDREÆ.

Epidendrum cepiforme. Hooker. Onion-rooted Epidendrum. *Bot. Mag.* t. 3765. This distinct species of Epidendrum, of the *Encyclia* section, is in the collection of the Duke of Bedford, and was sent to the above collection by J. Parkinson, Esq., Her Majesty's Consul at Mexico. As its specific name indicates, its pseudobulb is round, and somewhat similar to an onion. The panicles are large and numerous, four of which are stated to be about three feet high. The flowers are of an orange brick-dust colour, and very numerous. Its nearest ally is said to be *Ep. oncidioides*. *Bot. Reg.* t. 1623. *Bot. Mag.*

## CALENDAR OF GARDENING OPERATIONS FOR JANUARY.

Little can be done in the early part of this month in the houses, except the usual routine of watering, surfacing, and keeping the plants free from decaying leaves. Plants in pits and cold frames will require great care after so wet an autumn, in looking them over to see that they do not perish from damp, giving them abundance of air every fine day, and no water except to keep them absolutely from perishing for want of it. Fresh surfacing with rather dry mould will also be beneficial to them.

Towards the middle or end of the month the putting in cuttings of half-hardy, soft-wooded, and free-flowering plants, wanted for decorating the borders during summer, may be commenced, consisting of Verbenas, Salvias, Fuchsias, Heliotropes, Petunias, Nauenburgias, &c. &c.

Those of the same description that were rooted in autumn, and preserved in stove-pots, may now be potted off singly and placed in peat, where they will soon grow vigorously and make fine plants by the season, for transplanting in April or May.

Inarch Camellias. Bring in, from time to time, Roses, Rhododendrons, Lilacs, and all other plants for forcing, so as to keep up a succession of flowers.

Cuttings of some of the more fresh-growing kinds of Ericas may now be put in sand and covered with bell-glasses. The young and tender shoots succeed best; and it is sometimes necessary to put the plants into the stove for two or three weeks to force the shoots, so as to make them fit for taking off for cuttings.

Cactus Speciosus, Speciosissimus, Ackermanni, and Vandesii, that have been kept dry and placed in the greenhouse for some time, may in part be removed into the stove towards the end of the month, where by giving heat and moisture they will soon show abundance of blossoms.

# ÆCHMEA SUAVEOLENS.

(*Sweet-smelling Æchmea.*)

LINNEAN SYSTEM.
HEXANDRIA MONOGYNIA.

No. 134.

NATURAL ORDER.
BROMELIACEÆ.

## GENERIC CHARACTER.

Æchmea. (Ruiz. et Pav.) *Bracteæ* sub floribus cyathiformes, spinoso aristatæ, integerrimæ vel tri-crenatæ. *Calyx* triphyllo-tripartitus; laciniis æqualibus, spiraliter convolutis, aristatis, rariùs muticis, uno latere obliquè dilatatis. *Petala* 3 calyce multo longiora, obtusa vel acuta, infernè convoluta, basi squamosa, rariùs nuda. *Filamenta* lineari-filiformia, receptaculo inserta, 3 petalorum basi adnata. *Antheræ* subincumbentes dorso affixæ. *Stylus* filiformis. *Stigmata* 3 linearia vel subpetaloidea, spiraliter contorta. *Bacca* ovato-rotundata, parùm succosa, trilocularis, loculis polyspermis. *Semina* placentæ in apice anguli interioris positæ affixa, obovata vel oblonga, primùm basi filo gracili appendiculata, demùm nuda.—(*Schulte's Syst. Veget.* vol. vii. part ii. p. 62.)

*Bracts* that are situate under the flowers, cup-shaped, terminating with a spiny bristle, very entire, or thrice-crenate. *Calyx* three-parted, divisions equal, spirally convolute, bristly at the apex, rarely pointless, one side obliquely dilated. *Petals* much longer than the calyx, obtuse, or acute, convolute beneath, scaly at the base, rarely naked. *Filaments* narrowly filiform, inserted in the receptacle, adnate to the base of the three petals. *Anthers* somewhat incumbent, fixed by their back. *Style* filiform. *Stigmata* three linear, or somewhat petaloid, spirally twisted. *Berry* ovate, roundish, a little succulent, three-celled, cells many-seeded. Seeds fixed to the placenta at the apex of the interior angle, obovate, or oblong, in the first instance appendiculate at the base by a slender thread, afterwards naked.

## SPECIFIC CHARACTER.

Æ. suaveolens; *foliis* ensiformibus pungentibus; *margine* aculeatis; *scapo* simplici lanato-tomentoso; *paniculâ* cylindraceâ; *ramulis* flexuosis; *floribus* 6—8 sessilibus inapertis; *bracteis* linearibus scariosis: *bracteolis* venosis; *petalis* violaceis; *paniculâ* folio breviori.

*Leaves* sword-shaped, pungent; *margin* prickly; *scape* simple, woolly-tomentose; *panicle* cylindrical; *branchlets* flexuose; *flowers* from 6 to 8, sessile, unopened; *bracts* linear, scarious; *bractlets* veined; *petals* violet-coloured; *panicle* shorter than the leaf.

Descr.—*Plant* from the base to the apex of the leaf about two feet and a half high. *Leaves* closely imbricate at the base, sword-shaped, pungent, slightly clothed with a mealy downy pubescence, which on some of the leaves is more conspicuous at the edges. *Margins* strongly armed with large brownish prickles. *Inflorescence* paniculate. *Scape* about a foot long, covered with a soft arachnoid tomentum. *Bracts* scarious, white, from about an inch to an inch and a half long, covered with the same arachnoid tomentum at the back, more particularly at the base.

*Branches* of the inflorescence (the whole of which are covered with a mealy downy pubescence) about two inches long, flexuous, each containing from 6 to 8 flowers. *Bractlets* cup-shaped, encasing the ovarium about half way up, ribbed, and terminating in a dark brown prickle. *Calyx* connivent, aculeate, pubescent, similar to the other parts of the panicle, divided into three parts, which are concrete at the base ; the sides are scarious, obtuse, and unequal. *Petals* three, incurved at the apex, and when fully developed, are as long as the ovarium and calyx together, but never expand, unless in a trifling degree : they are of a beautiful violet colour when in perfection, but when decayed, become spirally twisted, and assume a most beautiful crimson. *Stamens* six, inserted in the torus, two of which are arranged opposite to each petal. *Anthers* linear, of a pale sulphur colour, attached by their back to the filament, dehiscing longitudinally, and towards the axis. *Style* longer than the stamens, the upper part of which is of a light violet colour. *Stigmata* three petaloid, spirally twisted, smooth. *Ovarium* (immature), cylindrical, and somewhat triangular, three-celled. *Seeds* numerous, pendulous, and situated at the apex of the cells.

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We are not aware that more than one species of this genus has before been published in any British botanical periodical, viz. *Æchmea Mertensii*, Bot. Mag. t. 3186. It may therefore be considered as an interesting and valuable addition to Botanical collections. In 1830, the time at which the last volume of Schulte's "Systema Vegetabilium" made its appearance, and which contained the conclusion of *Hexandria Monogynia*, there were described six species, all of which have been published, we believe, in Von Martius's "Flora Braziliensis," a work unfortunately too expensive for most private collections to possess. However, with none of those described in the work of Schulte's, above quoted, will it agree. We have, therefore, considered it to be a distinct species, and from the very pleasing smell of the inflorescence, which much resembles that of the Florentine orris-root, we have given it the specific name *suaveolens*. Our drawing was made from a plant in the collection of the Birmingham Botanical and Horticultural Society. It is a native of Brazil, and was received from that country through the kindness of E. W. Fry, Esq., to whom the above establishment is deeply indebted for valuable importations of plants at various times from the same country.

For its culture it requires stove heat, and is very easily managed. It should be potted in loam peat and sand. When the plants are grown to a sufficient size, they can be forced into flower by being kept without water for some weeks, and afterwards having a regular supply, with an increased degree of heat. The generic name is formed from *αιχμη*, a point ; its specific name *suaveolens*, from the Latin, alludes to its fragrant smell.

# BEGONIA BARKERI.

(*Mr. Barker's Begonia.*)

LINNEAN SYSTEM.
MONŒCIA POLYANDRIA.

No. 135.

NATURAL ORDER.
BEGONIACEÆ.

GENERIC CHARACTER.

Begonia (Lin.) Masc. *Corolla* nunc 0, nunc tetra-petala. *Calyx* polysepalus 4—9; sepala plerumque (non semper) inæqualia.—Fœm. *Corolla* nunc 0, nunc tetrapetala. *Styli* 3 bifida rariùs multifida. *Capsula* triquetra, alata, trilocularis, polysperma.

Male. *Corolla* sometimes wanting, sometimes 4-petaled. *Calyx* many-sepaled, from 4 to 9; sepals mostly, not always, unequal.—Female. *Corolla* sometimes none, sometimes 4-petaled. *Styles* 3, bifid, rarely many-cleft. *Capsules* 3-sided, winged, 3-celled, many-seeded.

SPECIFIC CHARACTER.

B. Barkeri; acaulis; *foliis* basi inæqualiter cordatis, obsoletè lobatis, acutis, suprà glabris nitidis, subtùs hirsutis; *scapo* longissimo piloso; *floribus* masculis, dipetalis cymosis, cymâ dichotomè ramosissimâ; *petalis* obovatis, subtùs pilosis; *antheris* linearibus, longitudinaliter dehiscentibus.

Stemless; *leaves* unequally cordate at the base, obsoletely lobed, acute, the upper surface smooth and shining, under surface hairy; *scape* very long, hairy; *flowers* male, 2-petaled, cymose, cyme very much branched in a dichotomous manner; *petals* obovate, hairy underneath; *anthers* linear, dehiscing at the side lengthwise.

Descr.—Herbaceous, stemless; *root* thick and fleshy, much resembling that of a Gesneria. *Leaves* petiolate; *petiole* about a foot long, densely covered with paleaceous dentate hairs. *Leaves* very large, about eighteen inches in diameter, and two feet from the base to the apex, unequally heart-shaped at the base, margin brownish, obsoletely lobed, acute, the upper surface smooth and shining, the under surface hairy; the hairs on the veins, which are very prominent, similar to those upon the petiole. *Scape* about four feet high, and densely covered with the same paleaceous hairs as those on the petiole, but they are narrower and longer. *Bracts* (?) brown, very deciduous. *Inflorescence* composed entirely of male flowers, arranged in a cyme. *Petals* two, white, obovate, the inner surface smooth, the centre of the exterior surface pilose. *Anthers* about eleven, linear, dehiscing at the edges, longitudinally from the base to the apex. *Female* flowers entirely absent.

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Looking at the immense leaves and scape of this plant, we cannot but consider it a most noble species; and although it will not be regarded as one of the most showy, it is doubtless the most gigantic species hitherto described.

It is remarkably tardy in the development of its inflorescence, *nine months* having elapsed from the first appearance of the flower-bud to the full expansion of the flowers. When the flower-scape first makes its appearance it is terminated by a twin flower-bud, each of which, as the scape elongates, again separates into two parts; these continue to separate repeatedly until is formed a cyme of nine inches in length and six in diameter.

During the development of the inflorescence, an innumerable quantity of dark brown scales are thrown off, which give it an appearance very different from any species we have hitherto seen.

It is a native of Mexico, and was found by Mr. Ross, the collector of G. Barker, Esq., of Springfield, on the Trapean Mountains, from whence the roots were imported in 1837. One of these roots was liberally presented by Mr. Barker to the Birmingham Botanical and Horticultural Society. From this plant, (which has just flowered,) our drawing has been taken. The leaves and fleshy crown of the root, it will be perceived, are much diminished in size.

For cultivation, it requires a cool stove, and the only mode of increase that has yet occurred is by cutting out the buds formed on the fleshy root, with a portion of the root attached to them, which will soon root when planted in sand. The soil should be peat and loam.

# ONCIDIUM ORNITHORYNCHUM.

(*Bird's-beak Oncidium.*)

LINNEAN SYSTEM.
GYNANDRIA MONANDRIA.

No. 136.

NATURAL ORDER.
ORCHIDACEÆ § VANDEÆ.

## GENERIC CHARACTER.

Oncidium (SWARTZ.) *Perianthium* explanatum. *Sepala* sæpiùs undulata; lateralibus nunc sub labello connatis. *Petala* conformia. *Labellum* maximum ecalcaratum cum columnâ continuum, variè lobatum, basi tuberculatum vel cristatum. *Columna* libera, semiteres, apice utrinque alata. *Anthera* semi-bilocularis, rostello nunc abbreviato, nunc elongato rostrato. *Pollinia* 2, posticè sulcata, caudiculâ planâ, glandulâ oblongâ.—Herbæ *epiphytæ*, nunc pseudobulbosæ. *Folia* coriacea. *Scapi* paniculati vaginati, rariùs simplices. *Flores* speciosi, lutei, sæpius maculati, rarò albi.

*Perianth* explanate. *Sepals* more frequently undulate; the lateral ones sometimes connate beneath the labellum. *Petals* similar in form. *Labellum* very large, spurless, continuous with the column, variously lobed, tuberculated or crested at the base. *Column* free, semiterete, with the apex winged on both sides. *Anther* half 2-celled, rostellum sometimes short, sometimes elongated, beaked. *Pollen-masses* 2, furrowed behind, with a flat caudicula and an oblong gland. *Epiphytic* plants sometimes with pseudo-bulbs. *Leaves* leathery. *Scapes* panicled, sheathed, more rarely simple. *Flowers* handsome, yellow, most frequently spotted, rarely white.

## SPECIFIC CHARACTER.

O. Ornithorynchum; *foliis* lanceolatis bulbo oblongo compresso 2-3-phyllo, 4-plo longioribus, *scapis* pendulis paniculatis; *sepalis petalisque* subæqualibus spathulatis; *labello* subpanduriforme apice emarginato, cristâ 7-dactylâ; *columnæ* coronatæ longè rostratæ alis duabus cuneatis erectis; *rostro* recto.—(*Bateman, in Orchidaceæ of Mexico and Guatemala.*)

*Leaves* lanceolate, 4 times longer than the oblong, compressed, 2-3-leaved bulb; *scapes* pendulous, panicled, sepals and petals somewhat equal, spathulate; *lip* somewhat panduriform, emarginate at the apex; *crest* with 7 excrescences; the two wings of the crowned, long-beaked *column* cuneate, erect; *beak* straight.

Oncidium Ornithorynchum.—*Humb. et Kunth.*

DESCR.—*Pseudo-bulbs* oblong or ovato-oblong, compressed, striated, from one and a half to two and a half inches long, each bearing 2 or 3 lanceolate, acute, somewhat coriaceous leaves varying from 8 to 12 inches in length. *Scape* branched, many-flowered. *Sepals* and *petals* of a delicate lavender colour, with a tendency to a rosy tint. *Lip* similar in colour, fiddle-shaped, 3-lobed, the middle lobe narrow, elongated, with a dilated emarginate apex; the central portion of the margin, together with that of the lateral lobes, reflexed. *Crest* of a rich orange colour, composed of 7 tubercular projections, of which the central one is the most prominent. *Column*

bent backwards at the apex, near which are placed 2 upright, toothed wings; between these is seen a projection of the column, which, with the superincumbent anther, present a strong resemblance to the head and beak of a bird.

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This is an elegant and interesting species of Oncidium, the flowers of which, in addition to the delicacy and peculiarity of their colour, are still more desirable on account of their fragrance, which much resembles that of new hay. It is a native of Mexico.

Our drawing was made from a plant in the collection of George Barker, Esq., of Springfield.

It requires the same treatment as the other species of this genus.

For the derivation of the generic name *Oncidium*, see vol. i. page 24. The specific name *ornithorynchum* is derived from the Greek words *ορνις* a bird, and *ρυγχος* a beak.

Fig. 1, Anther; 2, Pollen-masses, caudicula and gland; 3, Column.

# ONCIDIUM BATEMANNIANUM.

(*Mr. Bateman's Oncidium.*)

LINNEAN SYSTEM.
GYNANDRIA MONANDRIA.

No. 137.

NATURAL ORDER.
ORCHIDACEÆ § VANDEÆ.

## GENERIC CHARACTER.

Oncidium (SWARTZ.) *Perianthium* explanatum. *Sepala* sæpiùs undulata; lateralibus nunc sub labello connatis. *Petala* conformia. *Labellum* maximum, ecalcaratum, cum columnâ continuum, variè lobatum, basi tuberculatum vel cristatum. *Columna* libera, semiteres, apice utrinque alata. *Anthera* semi-bilocularis, rostello nunc abbreviato, nunc elongato rostrato. *Pollinia* 2, posticè sulcata, caudiculâ planâ, glandulâ oblongâ.—Herbæ *epiphytæ*, nunc pseudo-bulbosæ. *Folia* coriacea. *Scapi* paniculati vaginati, rariùs simplices. *Flores* speciosi, lutei, sæpiùs maculati, rarò albi.

*Perianth* explanate. *Sepals* more frequently undulate; the lateral ones sometimes connate beneath the labellum. *Petals* similar in form. *Labellum* very large, spurless, continuous with the column, variously lobed, tuberculated or crested at the base. *Column* free, semiterete, with the apex winged on both sides. *Anther* half 2-celled, rostellum sometimes short, sometimes elongated, beaked. *Pollen-masses* 2, furrowed behind, with a flat caudicula and an oblong gland. —*Epiphytic* plants sometimes with pseudo-bulbs. *Leaves* leathery. *Scapes* panicled, sheathed, more rarely simple. *Flowers* handsome, yellow, most frequently spotted, rarely white.

## SPECIFIC CHARACTER.

O. Batemannianum; *pseudo-bulbis* ovato-oblongis, compressis, glabris, vix ancipitibus; *foliis* coriaceis, oblongo-ensiformibus, carinatis, acutis, striatis, obscurè maculatis; *scapo* erecto, longissimo, apice ramoso; *sepalis* laneeolatis, marginato-unguiculatis, *supremo* arcuato, undulato, *lateralibus* longioribus, marginibus revolutis; *petalis* spathulatis, valdè undulatis; *labelli* lobis *lateralibus* nanis, rotundatis, undulatis, *intermedio* magno, reniforme, apice, emarginato; *cristæ* caruneulis numerosis obsitâ; *columnæ alis* subrotundatis undulatis.

*Pseudo-bulbs* ovate-oblong, compressed, glabrous, scarcely 2-edged; *leaves* leathery, oblong-ensiform, keeled, acute, striated, obscurely spotted; *scape* erect, very long, branched at the apex; *sepals* lanceolate, clawed, claws margined, the upper one arched, undulated, the lateral ones longer, with the margins revolute; *petals* spathulate, very much undulated; *lateral* lobes of the *labellum* small, rounded, undulate, *intermediate one* large, kidney-shaped, emarginate at the apex, *crest* studded with numerous fleshy projections; *wings of the column* somewhat rounded, undulated.

Oncidium Batemannianum.—*Parmentier* MSS.

DESER.—*Pseudo-bulbs* large, (4 to 5 inches long,) of a pale green, compressed, the edges of which are embraced by the sheathing bases of the leaves. *Leaves* two feet long by two and a

half inches broad, of a rich green, obscurely marked towards the base with dark spots. *Scapes* several, from six to eight feet long, glaucous, clothed with pale, acute, distant bracteas, sheathing at the base. *Sepals* and *petals* reddish brown, slightly marked with yellow; *lip*, *column*, and *wings*, of a rich brilliant yellow; the *crest* (which is yellow, copiously marked with delicate patches of minute brown spots) consists of five elevated, parallel, longitudinal ridges, of which the two external ones terminate in horn-like processes; the central one is continued forwards, and terminates in a sharp, abrupt ridge, beneath which it spreads laterally, even upon the base of the lateral lobes of the lip, thus presenting a broad surface, covered with numerous tooth-like processes.

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This new and handsome species of Oncidium is in the collection of George Barker, Esq., of Springfield, who received it from M. Parmentier, of Paris. It is closely allied to *O. altissimum* and *O. Baueri*, but is sufficiently distinct from each of those species. It differs from *Baueri* in its smooth pseudo-bulbs, which scarcely present the slightest angle, in the wings of the column, which are somewhat rounded (not truncated), in the less compound structure of the scape, which is panicled merely at the apex, and in the clear and brilliant colour of the flowers. From *altissimum* it differs also in the shape of the pseudo-bulbs, and in the erect (not decumbent) scape; while it differs from both in the more distant position of the bracteas upon the scape, (the internodes being usually six inches in length), and in the numerous projections which compose the crest. The pseudo-bulb and foliage, as represented in our plate, are greatly diminished in size.

The specific name, as suggested by M. Parmentier, we have great pleasure in adopting, in compliment to a gentleman who has for some years devoted himself to the cultivation of this interesting tribe of plants, who has been the means of introducing to this country a great number of new species, and who is illustrating many of them in one of the most magnificent works ever published in this or any other country, "The Orchidaceæ of Mexico and Guatemala, by James Bateman, Esq."

## ON THE DEVELOPMENT OF THE THECA, AND ON THE SEXES OF MOSSES.

(*Continued from page* 169.)

"The outer peristome," observes Mr. Valentine, "is universally considered to arise from the theca itself; whilst the inner is believed to arise from the internal membrane, or columellar membrane of this paper. The necessity of substituting this name will presently appear. To say that the outer peristome *arises* from the theca would give an incorrect idea both of its origin and connexion. It is *continuous* at the base, with a delicate lining membrane, which is very intimately attached to the theca. The existence of this lining membrane, which has hitherto escaped the notice of observers, may be proved by taking a portion of the theca from which the columellar membrane has been detached, and carefully separating the peristome from above downwards, when the lining membrane will remain attached to the base. A very thin longitudinal section will also show the division of the theca itself into an external and internal layer. The former, when mature, is of a dense coriaceous or even horny texture; whilst the latter is of a loose spongy cellular tissue. The most favourable examples to prove this fact by dissection are found in the genus *Tortula;* but the *Hypnums*, a genus very remote from *Tortula*, are by no means unfavourable. The term lining or internal membrane ought properly to be applied to this newly-described layer; but to prevent confusion, it appears desirable to abandon the use of this name altogether, and to supply its place with the term columellar membrane, designating the proper lining of the theca the thecal membrane. The inner peristome is continuous with the columellar membrane, at the point where this last is attached to the inside of the stoma. These peristomes are not always found. Some genera are altogether destitute of them, while others have only one, which, as far as my observations have gone, is always the external."

After naming several instances in illustration of these several facts, Mr. Valentine proceeds to describe the development of the sporules, which process he supposes may commence at the time of the separation of the columellar membrane from the columella. After alluding to the opinions of Dr. Hooker, Dr. Brown, Dr. Greville, and Mr. Arnott, Mr. Valentine says, "My observations have convinced me that the sporules are formed from a gummy fluid, which is secreted either by the columella or columellar membrane (most probably by both), and that this secretion becomes cellular by the gradual separation of the fluid from the solid part; the separation taking place in numberless points throughout the whole mass of secretion. As the little particles of fluid increase in size, the solid material increases in density, until it has assumed the consistence of membrane, which forms an envelope for every separate particle of fluid. Each of these particles, with its investing membrane, then detaches itself from its neighbour

and becomes an independent cell or sporule. The following are the facts which have induced me to form this opinion. I find upon puncturing the sporular sac of any moss in the young state, that a quantity of gummy fluid escapes through the puncture. I find also, that the young sporules always adhere together in masses, if carefully taken out of their natural situation, apparently from being imbedded in an adhesive fluid. The structure of the sporules themselves favours the opinion. In the young state they are remarkably pellucid, and contain a quantity of particles, either in one mass or arranged in *three or four well-defined smaller masses*. These particles I have observed to move with great rapidity. (The species under examination was *Bartramia pomiformis*.) The formation of these particles takes place either during the formation of the cell or very soon afterwards." Mr. Valentine then adduces satisfactory proofs that the sporules are not formed, as supposed by some, by the columella, inasmuch as they are invariably confined between the middle and columellar membranes. Mr. Valentine, in conclusion, enters upon the difficult subject of the *sexes* of mosses, in which our limited space will not permit us to follow him; we must content ourselves, therefore, with briefly stating that, after a series of observations, he is led to believe that the sporules of mosses, and of all cellular plants, are analogous to the pollen of the *vasculares*, slightly modified by circumstances, but agreeing in every essential particular.

## BOTANICAL NOTICES OF NEW PLANTS.

### DICOTYLEDONES.

#### PASSIFLOREÆ. Juss.

Passiflora Mooreana. Lindl. Mr. Moore's Passion Flower. *Bot. Mag.* N. S. t. 3773. This species of Passion-flower bears light flowers, which both in form and colour much resemble those of *Passiflora Cœrulea*, but in addition to which the flowers are fragrant. However, it is stated that its nearest affinity is with *Passiflora Tucumanensis*, published in the Bot. Mag. t. 3636, from which it is distinguished by its differently shaped and nearly sessile leaves and glands, and by its smaller flowers.

The seeds from which this plant was raised were received in 1827, with many rarities, from Mr. Tweedie of Buenos Ayres, at the Royal Dublin Society's Botanic Garden at Glasnevin, in which establishment it has been successfully cultivated by Mr. Moore, after whom it has been named. It probably will bear the open air. It flowered in 1829. *Bot. Mag.*

#### COMPOSITÆ.

Dahlia Royleana. (*sp. nov.*) Caule glabro ramoso; foliolis ovatis basi cuneatis grossè serrato-dentatis, dentibus ciliatis apiculatis; ligulis fœmineis fertilibus floribus terminalibus.

This new species of Dahlia, which is perfectly distinct from all hitherto known,

was raised from seeds received from the Hon. East India Company, through the kindness of Professor Royle, after whom we have named it. It is the more interesting as being a native of the Himalaya Mountains. Of the colour of the ray we cannot speak with certainty, as the plants were all cut off by the frost just before they were about to expand.

PHILADELPHEÆ. Don.

Deutzia Corymbosa. R. Brown. Corymb-flowering Deutzia. *Bot. Reg.* 1840, t. 5. This is a very beautiful shrub, bearing a profusion of corymbs of white flowers. The plants composing this genus are all shrubs, and hardy; and from that circumstance, together with their beauty, will become a great acquisition to the shrubbery. When Decandolle published the fourth volume of his work (1830), only one species is mentioned, *D. scabra*, and even that species does not appear to have been known to him except by the plate in Lamarck's illustrations. Since that time, no less than five other species have been discovered, all natives of India.

LABIATÆ.

Gardoquia multiflora. Ruiz et Pav. Many-flowered Gardoquia. *Bot. Mag.* t. 3772. This is a truly handsome plant, and the specimen figured in the above Magazine is certainly a very fine one. The flowers are about an inch and a half long, and have a pinkish red colour, and although not so brilliant as *G. Hookeri*, are in greater abundance. It is a native of Chili.

PITTOSPORACEÆ.

Sollya linearis. Lindl. Narrow-leaved Sollya. *Bot. Reg.* 1840, t. 3. This species is stated to be very near to *S. heterophylla* in its general appearance and in the size and colour of the leaves; but differs from it in its narrower leaves, which have no appearance of being serrated: it also is supposed to be a much freer flowerer. It is a native of the Swan River Colony, where it was found by Mr. Drummond, and others. The plant from which the drawing was taken, was raised from seeds received from Mr. Mangles.

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MONOCOTYLEDONES.

IRIDEÆ.

Iris fragrans. Lindl. Sweet-scented Iris. *Bot. Reg.* 1840, t. 1. This very pretty and distinct species of Iris was found by Professor Royle in the north of India. In its habit it resembles the *I. nepalensis* of Don, but the flowers are extremely different. The fragrance of the flowers of this species makes it a desirable border-plant, independent of its pretty appearance.

LILIACEÆ.

Thysanotus intricatus. Lindl. Entangled Thysanotus. *Bot. Reg.* 1840, t. 4. This is a very pretty diffuse-growing plant, bearing violet flowers. It is a native of the Swan River Colony, and was introduced by Robert Mangles, Esq., Sunning Hill.

ORCHIDEÆ, § EPIDENDREÆ.

Epidendrum glumaceum. Lindl. Glumaceous Epidendrum. *Bot. Reg.* 1840, t. 6. This is a very delicate and handsome plant, bearing a spike of large white flowers which are beautifully striped with pink. It has much the habit of *Epidendrum fragrans*, but from which it differs in its inflorescence. It is a native of Brazil, and was imported by Messrs. Rollinson, of Tooting.

## CALENDAR OF GARDENING OPERATIONS FOR FEBRUARY.

Increase by the middle or latter end of the month the heat of the plant-stove.

Hedychiums, Gesnerias, and similar plants, also herbaceous plants that have been dormant all the winter, may be repotted, and have a very limited supply of water at first, which may be increased as they begin to grow.

Repot into larger-sized pots all plants requiring more room, and fresh surface all other plants.

Syringe overhead the plants in the stove in fine weather, and steam the house at night.

Greenhouse plants should now have abundance of air every fine day.

Fresh surface the plants, and turn them round on the stage.

Gladioluses, Ixias, Oxalises, and other Cape bulbs, will now be growing, and must have a moderate supply of water.

Pelargoniums should be placed further apart as they commence growing.

Fumigate where necessary.

Hotbeds may now be put up for raising tender and also half-hardy annuals, and for forwarding plants for turning out into the borders in May.

Verbenas, Fuchsias, and such-like plants that have been kept in store pots during the winter, should now be potted out singly.

Put in cuttings freely of greenhouse plants.

Prune shrubs, and fruit-trees, if not previously done.

Dig shrubberies, and layer the larger deciduous trees where increase is wanted.

Place some of the more rare varieties of Dahlias in heat to force out their shoots for cuttings, where more than an ordinary increase is wanted; plants, however, propagated at this time will not flower so fine as those plants that are propagated later.

Keep up a succession of forced flowers, such as Roses, Lilacs, Rhododendrons, Hyacinths, &c., by bringing in a fresh supply to the forcing-houses.